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PSYCHIATRIC ILLNESS CAUSING HOSPITALIZATION OR DEATH, 1967

Issued by the National Health Statistics Centre
of the
Department of Health, Wellington

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A. R. SHEARER, GOVERNMENT PRINTER, WELLINGTON,
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The opinions expressed in this report
do not necessarily represent the views
of the Department of Health

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INTRODUCTION

This report contains statistical information about 12,600 people who became in need of psychiatric care during 1967. It should be remembered that the characteristics of these people, while true for 1967, are not necessarily true for other years. There is no reason to believe that 1967 should not be regarded as a representative year, but it should be borne in mind that the information in this report outlines some of the characteristics of people reported as developing psychiatric illness in that year,but does not purport to describe the finer detail of those involved. This point is particularly important to remember when comparisons between different regions or different population groups have been made. Had the study been conducted in 1966 or 1968 a slightly different pattern would probably have emerged.

Nor should the figures be equated with the sum total of psychiatric illness in the community. People consulting their own doctors, people already resident in psychiatric hospitals before 1967 and people in need of psychiatric care who were not being treated are not included in the study.

It is necessary to make some comment on why 1967 was chosen as the year for the study. The report will be published in 1972 and it might well be thought that the lapse of five years reduces the usefulness of the material to the point where publication is hardly warranted.

The report contains information which has not previously been available in New Zealand, and this reason alone makes publication worthwhile.

In choosing a year for the study it was necessary that the same period of time be covered by each of the three sources of information. For mental hospitals,because a sizable proportion of people stay in hospital for a number of years, the statistical reporting system caters for the collection of admission and discharge data at separate points in time.It is therefore easy to identify all the people admitted in one year because admissions are reported during or shortly after the year in which they occur. However, for general hospitals where people usually stay in hospital for shorter periods of time, statistical reports are made only after each patient has been discharged. As a consequence, statistical reports for those patients admitted towards the end of any particular year are not available until well into the following year. Similarly, for deaths reported by coroners there can be a considerable time-lag between the date of death and the coroner's verdict.

An important reason for delay in publication was quite simply the magnitude of the task. Linking so many documents from various sources was a time-consuming exercise which could only proceed as time became available between other commitments. Furthermore, as it was known that the registration procedure would be a lengthy one, records that would not be required for the supply of current requests for information had to be selected.

Finally, 1967 was the last year in which the Seventh Revision of the International Classification of Diseases was used to classify the diagnostic information reported from all three sources.

F.H. Foster
Chief Health Statistician

General comment

The National Health Statistics Centre maintains a register of all inpatients treated in New Zealand mental hospitals and psychiatric units of public hospitals. Annual statistical reports about these people have been produced for some years, and in this way many of the demographic characteristics of the inpatient psychiatric population have been delineated. Information about trends in the composition and rate of development of these characteristics has also been obtained.

In addition to this material, which concerns people whose treatment is supervised by psychiatrists, the National Health Statistics Centre receives reports about all inpatients in New Zealand public hospitals and about all people who die in New Zealand. In these two latter groups many psychiatric conditions, suicides and attempted suicides are reported, a considerable number of which, because they do not come under the care of a psychiatrist, do not become registered with the national registry. The purpose of the present study was to collate for one year information about all the people about whom reports of psychiatric conditions were received, whether the reports originated from psychiatrists or not.

The people included in this study do not coincide with any conventional clinical or administrative grouping of the mentally ill in that they were not all inpatients, nor, in the case of some deaths, can it be assumed that they consulted a medical practitioner about their illnesses.

Composition of the population studied

In classifying the people included in the study according to the procedure by which reports of their illnesses were received by the National Health Statistics Centre, certain rules were formulated to cover those cases where reports of the same person were received from several sources. For the sake of brevity the term "psychiatric hospital" has here been used to describe mental hospitals and the psychiatric units of public hospitals. The term "general hospital" has been used to describe those public and private hospitals reporting cases which had not been seen by a psychiatrist. Preference was given over all others to a report received from a psychiatric hospital, as the patient would have been under the care of a psychiatrist, and it is likely that the diagnosis would have been more accurate than that made by a non-psychiatrist. Second preference was given to reports received from general hospitals in which psychiatric units were not established. The remaining reports were received by way of death certificates.

Of the 12,600 people in the survey, 8,896 or 70.6 percent were reported from psychiatric hospitals, 3,464 or 27.5 percent were reported from general hospitals, and 240 or 1.9 percent were reported by way of death certificates. The age and diagnostic structure of the people in each of these three groups differed considerably. Compared with the psychiatric hospital group, there were proportionally more younger and more older people in general hospitals and in the group reported by way of death certificates there were proportionally fewer people aged under 45 years and more aged 45 years and over.

The percentage distribution of cases reported from each of the three groups according to diagnosis is shown below:

Diagnosis	General	Psychiatric	Died
Senile and pre-senile dementia	6	6	3
Schizophrenia and paranoid states	3	20	-
Depressive psychosis	9	13	-
Other psychoses	5	9	2
Depressive neurosis	7	14	-
Other neuroses and psychiatric disorders	26	6	-
Alcoholism - all forms	15	10	7
Mental retardation	4	8	-
Other conditions	4	10	-
No diagnosis (includes suicide and attempts, observation)	20	4	88

Compared with the psychiatric hospital group, there were in the general hospital group proportionally only half as many people with psychotic illnesses but proportionally more with alcoholism and more cases where no psychiatric diagnosis was made. In this latter group, which accounted for one in five of the general hospital cases, the bulk of the cases were non-accidental drug overdose and attempted suicide cases.

The great majority of the death certificate cases did not have a psychiatric diagnosis. Nearly 9 out of each 10 death certificate cases (210 or 87.5 percent) were deaths from suicide where no psychiatric condition was stated in the Coroners' reports.

All rates quoted throughout this report have been calculated on the basis of the population recorded at the 1966 census.

AGES AND SEX

This study covers 12,600 people, 5,736 (45.5 percent) males, and 6,864 (54.5 percent) females. The rates were 426.9 per 100,000 male population and 514.9 per 100,000 female population. For both sexes combined the rate was 470.7 per 100,000 population. The numbers and rates are shown in Table 1.

There were differences in the age-specific rate configurations for males and females, although the median ages were practically the same - 40 years for males, 39 years for females.

The rates for both males and females reached their highest levels at ages 80 years and over. For males aged 85 years and over the rate was 1465.7 per 100,000. For females aged 85 years and over it was 1327.4 per 100,000. At ages below 10 years the rates for males were approximately half as high again as those for females, but from 10 years to 39 years the rates for females were between 20 percent and 50 percent higher than those for males. Between 40 and 69 years there was little difference in the rates for males and females. However, for people in their 70's the rates for females were higher, and at ages above 80 years the rates for males were the higher. The rates are shown in graph form in Figure 1.

The rate for males aged between 70 and 74 years is probably atypical. Comparable data for years other than 1967 are not available, as this is a study of one year only. There is evidence, however, that for first admissions aged between 70 and 74 years the 1967 rate was lower than usual.[1] During the 12 years 1958-69 the age-specific rate fluctuated between 303 in 1964 and 189 in 1966. In 1967 it was 199. The mean value for this period was 246. It would appear, therefore, that in 1967 fewer males in the 70 to 74 years age bracket were hospitalised for psychiatric illness. Apparently health statisticians as well as farmers yearn in vain for a "normal" year.

To summarise, of every 1,000 males in the population four were included in the study. For boys aged under 15 years the ratio was 1 in 1,000, but for ages between 15 and 79 years the ratios were between 4 and 7 per 1,000. A high point was reached for males aged between 45 and 49 years (7.4 per 1,000). This level was reached again for males at ages 75-79 years. Beyond this age the ratio increased substantially to 9 per 1,000 for males aged 80-84 years and 15 per 1,000 for males aged 85 years or more. It can be seen that all adult age groups contributed substantially to the cases included in this study, with a high point in the 40's. The rates do not increase with age until the very old ages are reached. In fact, males in their 60's had lower rates than males in their 40's and 50's.

For females the overall rate was higher - 5 females were included in the study for every 1,000 females in the population. For girls under 10 years the rates were less than those for boys. For the female population aged below 70 years the highest ratio was for those aged 25-29 years (8 per 1,000). From this point the rate decreased steadily to 6 per 1,000 for females in their early 60's. At older ages the ratio increased to 8 or 9 per 1,000 for ages below 85 years. Beyond this age the ratio was 13 per 1,000.

Relationship between psychiatric inpatient admission rates and age-specific rates of this study

Information on the age and sex of individuals admitted as psychiatric inpatients during each year is published in the Mental Health Data report as routine. The age-specific rates for individual people admitted during 1967 and the age-specific rates for people included in this study are shown in Figure 2. At the bottom of the graph the index numbers show the relative

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[1] Medical Statistics Report: Part II - Mental Health Data 1969

size of the difference between the two series of age-specific rates. The index has been calculated by expressing the psychiatric inpatient admission rates as equivalent to 100 for each age group. The values for the age-specific rates for people included in this study are therefore shown as percentages of the psychiatric inpatient rates.

Apart from ages under five years, where the rate for this study was more than double that for psychiatric inpatients (but where the numbers involved are rather small) the difference between the two sets of rates ranged between 46 percent and 74 percent. On the basis of these calculations for 1967 it is possible to make some estimate of the rates for later years by applying rounded-off percentages to the age-specific rates for individuals admitted as psychiatric inpatients during those years.

TABLE 1 : AGES AND SEX

Numbers and rates per 1,000 population

Ages	MALES		FEMALES		TOTAL	
	Numbers	Rates	Numbers	Rates	Numbers	Rates
0-	142	0.9	86	0.6	228	0.7
5-	147	1.0	100	0.7	247	0.8
10-	147	1.1	168	1.3	315	1.2
15-	477	3.8	677	5.6	1,154	4.7
20-	550	5.6	685	7.3	1,235	6.5
25-	450	5.3	662	8.0	1,112	6.6
30-	400	5.2	555	7.6	955	6.4
35-	502	5.9	591	7.5	1,093	6.7
40-	584	7.2	589	7.5	1,173	7.3
45-	535	7.4	547	7.4	1,082	7.4
50-	464	6.7	491	7.1	955	6.9
55-	392	6.4	383	6.4	775	6.4
60-	275	5.6	299	6.0	574	5.8
65-	236	6.5	263	6.1	499	6.3
70-	118	4.8	285	8.4	403	6.9
75-	133	7.4	218	8.5	351	8.1
80-	100	9.4	139	8.8	239	9.1
85+	84	14.7	126	13.3	210	13.8
Totals	5,736	4.3	6,864	5.1	12,600	4.7

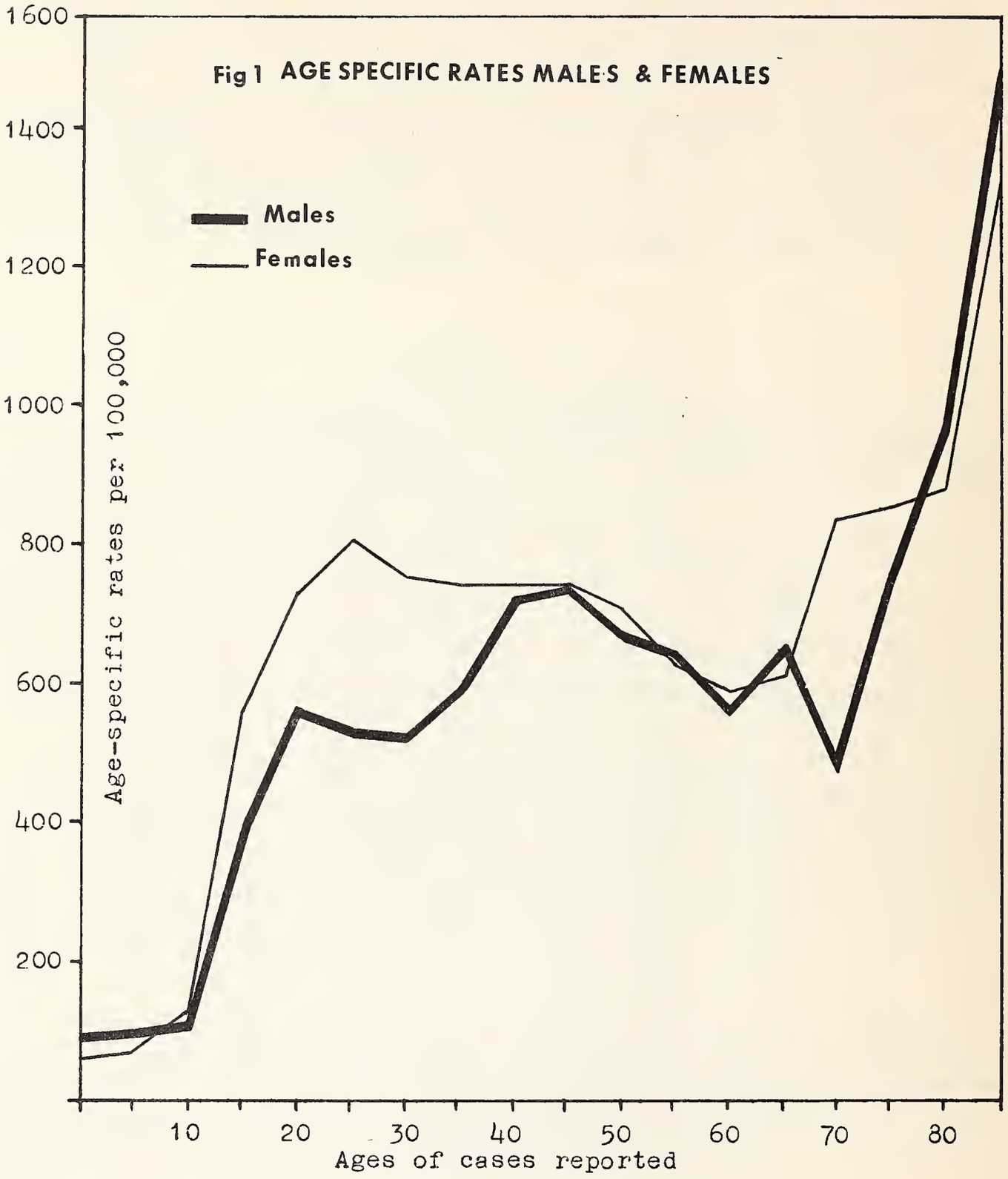
Fig 1 AGE SPECIFIC RATES MALES & FEMALES
Males
Females
Age-specific rates per 100,000
1600
1400
1200
1000
800
600
400
200
10
20
30
40
50
60
70
80
Ages of cases reported

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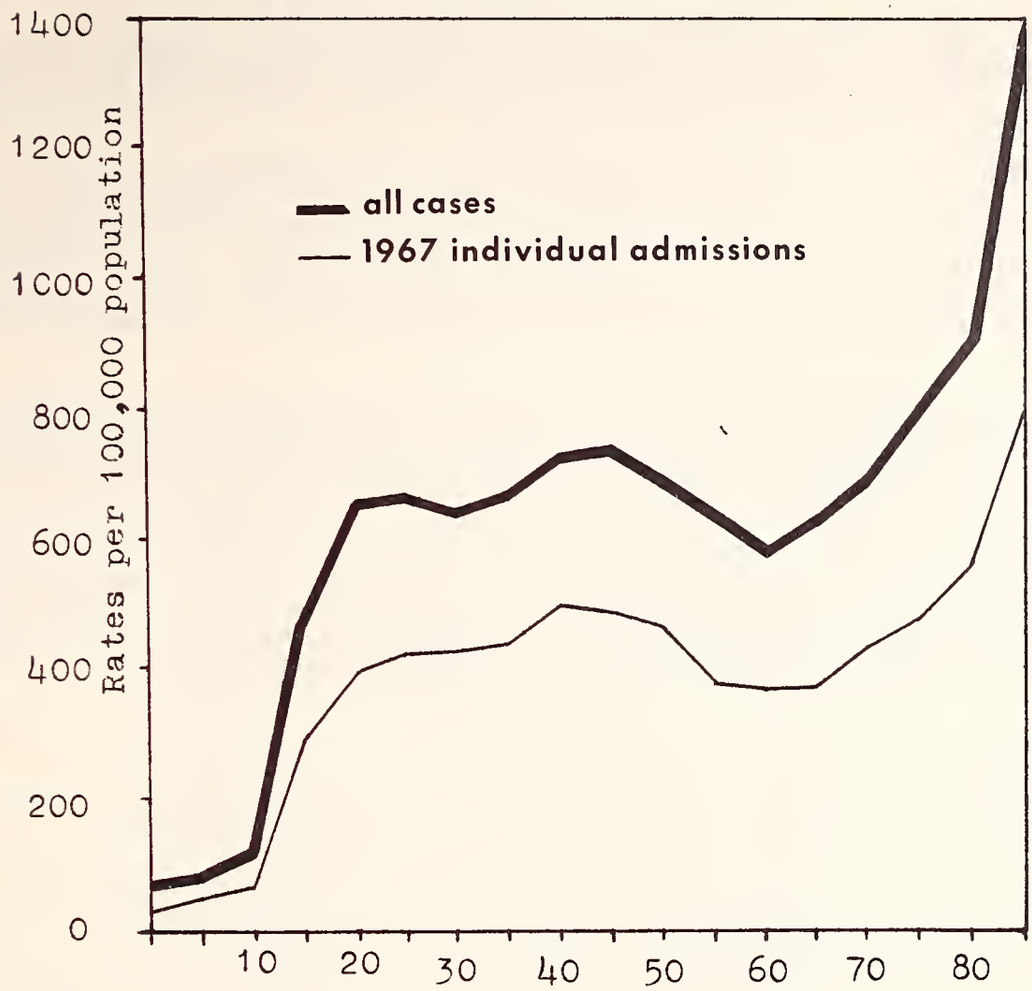
Fig 2 AGE SPECIFIC RATES FOR ALL CASES IN STUDY & ALL PSYCHIATRIC INPATIENT ADMISSIONS.



REGIONAL DISTRIBUTION

Regional rates derived from the admission of inpatients to psychiatric hospitals have shown considerable differences one from another, but are not easy to interpret because all hospital districts in the country cannot offer psychiatric services similar to those available in cities.

The inclusion of cases treated in general hospitals gives a more valid indication of the use of hospital beds for the treatment of psychiatric illness. It also gives a more comprehensive although still incomplete picture of people under psychiatric care. Day patients, outpatients and those people who consult private psychiatrists would need to be included to achieve that coverage, an ideal unfortunately beyond the means available at present.

Another factor influencing regional rates arises from the age structure of the local population. There were 790 people aged under 15 years in this study. This was equivalent to 6.3 percent of the total cases. At the time of the census just under one-third of the population (32.7 percent) was in this age group. It follows, therefore, that if an unduly large proportion of the total population in a particular hospital district was aged under 15 years, then the population exposed to the risk of developing a psychiatric disorder would be considerably reduced. In the table below, the percentage of residents aged 14 years and under is shown for each hospital district. The districts are arranged in descending order.

Waiapu	49.0	Vincent	34.6
Bay of Plenty	44.5	Waitaki	33.8
Opotiki	43.9	Southland	33.7
Wairoa	43.5	Hawke's Bay	33.4
Taumarunui	40.0	Thames	33.3
Waipawa	38.2	Ashburton	32.7
Northland	37.9	Palmerston North	32.7
Waikato	37.5	Marlborough	32.6
Cook	37.1	West Coast	31.8
Wairarapa	36.2	South Canterbury	31.6
Maniototo	36.1	Nelson	31.3
Tauranga	35.8	Auckland	30.5
South Otago	35.4	North Canterbury	29.8
Dannevirke	35.3	Wellington	29.1
Wanganui	35.1	Otago	28.9
Taranaki	34.8	NEW ZEALAND	32.7

In the review which follows the ranking in this list should be kept in mind when districts are shown as having a high or low rate. Districts were considered to have a high rate if it was higher than one standard deviation from the mean and a low rate if less than one standard deviation below the mean.

Regional rates (Table 2) were calculated by relating the number of people admitted from each hospital district to the 1966 census populations in those districts. Four districts (Opotiki, Waiapu, Vincent and Maniototo) had census populations of less than 10,000. One of these, Maniototo, had a census population of less than 3,000. When age-specific rates were calculated for Maniototo very high values resulted in four of the five age groups used. The rates have not been adjusted, but after standard deviations were calculated the high Maniototo rates were excluded on the grounds that they did not fall within the bounds of normal distribution.

The combining of smaller districts with their larger neighbours was considered but not proceeded with because such aggregations involve the arbitrary choice of one of several neighbours.

The age groups were combined within each hospital district on the basis of grouping together rates of similar levels. This is a departure from the age grouping often used in morbidity studies in which groups of people are classified in terms of their activities as wage earners, for example, pre-school and school children (0-14 years), adolescent and early working years (15-24 years), middle working years (25-44 years), later working years (45-64 years) and years of retirement (65 years and over). Such classifications are often useful in studies of morbidity but do not have much relevance here. This is particularly so for ages 60 years and over which contain both the highest and the lowest age-specific rates for the adults included in this study.

In the table below, the age-specific rates are shown for all the people included in this study. For ages up to and including 84 years a 5-year age grouping has been used. People aged 85 years and over have been included in one group. The groups combined because of similar rates are:

0-14 years	age-specific rates per 1,000 for the three age groups were 0.7, 0.8 and 1.2
15-39 years	age-specific rates per 1,000 for the five age groups were 4.7, 6.5, 6.6, 6.4 and 6.7
40-54 years	age-specific rates per 1,000 for the three age groups were 7.3, 7.4 and 6.9
55-69 years	age-specific rates per 1,000 for the three age groups were 6.4, 5.8 and 6.3
70 years and over	age-specific rates per 1,000 for the four age groups were 6.9, 8.1, 9.1 and 13.8

In group 2 (15-39 years) the 15-19 age group is somewhat less than the other rates. However, it is very much higher than the age groups in group 1 and the number of cases involved is too small to warrant creating a special group for people in this age group alone.

Ages 0-14 years: The New Zealand rate for this age group was 0.9 per 1,000 population aged under 15 years.

Districts with high rates were:

South Otago	1.4
West Coast	1.5
Taumarunui	1.7
Nelson	1.9
Maniototo	4.8

Districts with low rates were:

Wairoa	0.2
Thames	0.1

The principal features of the diagnostic structure of people in this age group are shown below. In each 100 cases there were:

59 mental retardates,
13 cases of transient situational disturbance and behaviour disorders of childhood,
11 cases of neurosis and psychosomatic disorders,
6 cases of other personality disorders, and
11 cases of other diagnoses.

As the leading cause of admission for this age group was mental retardation and as the admission of young people for this cause is probably related to the nearness of institutions providing special training facilities, the high rate for Nelson could perhaps be related to the location of Braemar psychopaedic hospital in Nelson City. Similar psychopaedic facilities do not exist, however, in the other districts having high rates. The other three psychopaedic hospitals in the country are located in the Auckland, Palmerston North and North Canterbury districts, each of which had an average or slightly below average rate of admission for mental retardation.

15-39 years: The New Zealand rate for this age group was 6.1 for 1,000 population at these ages.

Districts with high rates were:

South Canterbury	7.3
Wairoa	7.3
Tauranga	7.4
Thames	7.6
Otago	8.0
West Coast	8.4
Maniototo	12.2

Districts with low rates were:

Waipawa	3.4
Waiapu	3.6
Bay of Plenty	4.1
Taranaki	4.3

A wide range of diagnoses was reported in this age group. In each 100 cases there were:

28 cases of neurosis and psychosomatic disorders,
20 cases of schizophrenia and paranoid states,
13 cases of self-inflicted injury and observation,
11 cases of other personality disorders,
8 cases of depressive psychosis,
6 cases of alcoholism,
5 cases of mental retardation, and
9 cases of other diagnoses.

40-54 years: The national rate per 1,000 population in this age group was 7.2. Districts with high rates were all in the South Island:

South Canterbury	10.0
Marlborough	10.5
West Coast	10.6
South Otago	11.4
Maniototo	11.6

Districts with low rates were:

Thames	4.7
Waipawa	4.2
Vincent	3.8
Bay of Plenty	3.5
Waiapu	1.4

Neurotic illness, psychosomatic disorders and alcoholism together accounted for nearly half of the cases. In each 100, 26 were for neurotic illness, 21 were for alcoholism, 17 were for schizophrenia and paranoid states, 15 were for depressive psychosis, 7 were for self-inflicted injury and observation, and 14 were for other diagnoses.

55-69 years: The New Zealand rate was 6.2 per 1,000 population. Two districts, Wairoa and West Coast, had the highest rates, each having 10.8 per 1,000. The rate for Cook was also high at 8.4 per 1,000.

Five North Island districts had low rates:

Waiapu	4.4
Taranaki	4.0
Taumarunui	3.9
Northland	3.8
Bay of Plenty	3.0

Neurotic illness, depressive psychosis and alcoholism together accounted for more than 60 percent of the cases. In each 100 there were 21 cases of depressive psychosis, 21 cases of neurotic illness and psychosomatic disorders, 20 cases of alcoholism, 17 cases of other psychoses, 10 cases of schizophrenia and paranoid states and 11 cases of other diagnoses.

70 years and over: The national rate was 8.4 per 1,000. Districts with high rates were:

West Coast	11.9
Wairoa	12.5
Wellington	13.3
Marlborough	13.3
Nelson	15.0
Vincent	16.7
Maniototo	31.1

Low rates were recorded for:

Taumarunui	5.3
Southland	5.3
Dannevirke	5.1
Bay of Plenty	4.4

Of every 100 cases, 50 were senile dementia, 12 were other personality disorders, 10 were depressive psychosis, 10 were neurotic illness, 5 were alcoholism and 13 were other diagnoses.

TABLE 2 : ADMISSIONS, BY HOSPITAL DISTRICTS AND AGE GROUPS

Hospital District	Number of admissions	Number of admissions per 1000 residents of the same age					
		0-14 years	15-39 years	40-54 years	55-69 years	70+ years	All ages
Northland	332	1.2	4.8	5.8	3.8	6.1	3.6
Auckland	2,955	0.9	6.3	7.2	5.9	7.3	4.8
Waikato	1,067	0.9	5.5	6.8	5.3	7.6	4.0
Thames	120	0.1	7.6	4.7	4.9	7.2	4.2
Tauranga	239	0.9	7.4	7.5	6.2	6.8	4.9
Bay of Plenty	81	0.5	4.1	3.5	3.0	4.4	2.4
Opotiki	28	1.0	5.4	8.7	7.6	-	3.9
Waiapu	11	0.7	3.6	1.4	4.4	-	1.9
Cook	170	0.5	6.3	6.6	8.4	6.5	4.4
Wairoa	56	0.2	7.3	8.1	10.8	12.5	4.8
Hawke's Bay	396	1.2	5.3	6.8	6.6	8.1	4.5
Waipawa	41	0.9	3.4	4.2	6.4	5.5	3.0
Dannevirke	58	0.9	5.3	7.6	8.1	5.1	4.4
Wairarapa	172	0.7	5.1	5.6	6.5	6.8	3.8
Taumarunui	62	1.7	5.8	6.7	3.9	5.3	4.1
Taranaki	311	0.6	4.3	5.7	4.0	7.2	3.4
Wanganui	306	1.0	4.6	7.4	5.6	7.0	4.0
Palmerston North	401	0.9	4.7	5.9	4.9	5.9	3.8
Wellington	1,733	0.7	6.7	9.1	7.8	13.3	5.9
Marlborough	151	1.5	6.3	10.5	5.1	13.3	5.7
Nelson	296	1.9	5.6	6.9	7.0	15.0	5.4
West Coast	256	1.5	8.4	10.6	10.8	11.9	7.1
North Canterbury	1,438	0.8	6.2	6.7	6.1	8.4	4.8
Ashburton	116	0.9	5.7	8.1	6.4	8.6	4.8
South Canterbury	329	1.3	7.3	10.0	7.8	9.0	6.1
Waitaki	127	0.6	6.3	7.1	8.0	11.0	5.0
Otago	712	0.9	8.0	7.9	6.0	8.3	5.7
South Otago	105	1.4	7.1	11.4	7.8	10.7	6.0
Vincent	38	0.7	6.4	3.8	6.8	16.7	4.6
Maniototo	28	4.8	12.2	11.6	7.9	31.3	9.7
Southland	465	0.6	6.2	7.0	5.8	5.3	4.4
NEW ZEALAND	12,600	0.9	6.1	7.2	6.2	8.4	4.7

Table 3 contains the district rates calculated on several bases. The first column shows the crude rates, i.e. the number of cases per 1,000 people of all ages residing in the district at the time of the 1966 national census. The second column shows the age-adjusted rates for each district. These rates have been calculated by applying age-specific rates for each district to the New Zealand population. In this way differences in the age structure of each district's population are adjusted to facilitate overall comparability.

TABLE 3 : ADMISSIONS, BY HOSPITAL DISTRICTS, CRUDE AND AGE-ADJUSTED RATES

Hospital District	Crude rate (per 1000 population resident in hospital district)	Age-adjusted rate (per 1000 population resident in hospital district)
Northland	3.6	3.8
Auckland	4.8	4.7
Waikato	4.0	4.3
Thames	4.2	4.4
Tauranga	4.9	5.1
Bay of Plenty	2.4	2.8
Opotiki	3.9	4.5
Waiapu	1.9	2.2
Cook	4.4	4.7
Wairoa	4.8	5.8
Hawke's Bay	4.5	4.5
Waipawa	3.0	3.2
Dannevirke	4.4	4.5
Wairarapa	3.8	4.0
Taumarunui	4.2	4.4
Taranaki	3.4	3.5
Wanganui	4.0	4.1
Palmerston North	3.8	3.8
Wellington	5.9	5.6
Marlborough	5.7	5.7
Nelson	5.4	5.2
West Coast	7.1	7.0
North Canterbury	4.8	4.6
Ashburton	4.8	4.8
South Canterbury	6.1	6.0
Waitaki	5.0	5.0
Otago	5.7	5.5
South Otago	6.0	6.2
Vincent	4.6	4.7
Maniototo	9.7	10.2
Southland	4.4	4.4
NEW ZEALAND	4.7	4.7

URBAN AND NON-URBAN REPRESENTATION

The 12,600 persons included in this study were drawn from all parts of New Zealand. A division into urban and non-urban dwellers showed the following pattern of distribution.

	Population 1966 census	Persons in study		Population per person
		Number	Percentage	
MALES				
Urban areas	820,147	4,063	71	219
Non-urban areas	523,596	1,673	29	313
FEMALES				
Urban areas	852,006	4,720	69	181
Non-urban areas	481,170	2,144	31	224

It will be observed that proportions in the study were similar in sex composition in urban and non-urban dwellers; the urban dwellers in both sexes represented a considerably greater proportion of the population at risk. This was not the position in rural districts. In the urban areas the males in the study represented one in every 219 persons of the population, whereas in the rural areas this proportion was reduced to one in every 313 of the population, a difference of 30 percent. Among the females, the urban dwellers represented one in every 181 of the population, and in rural areas, only one in every 224, a difference of only 19 percent.

The representation of the sexes per 10,000 population in the urban and non-urban population has been calculated for age groups and the age-specific rates are presented in Figure 3.

The following are the rates per 10,000 population for total males and females.

Males -		
	Urban areas	49.5
	Non-urban areas	32.0
Females -		
	Urban areas	55.4
	Non-urban areas	44.6

It will be observed that the urban rate exceeds the non-urban in both sexes.

Details of all age groups are provided in Table 4.

The male urban rate is also observed to be higher than the non-urban rate in all age groups, and with a steep rise from age 70 upwards. At the 1966 census 65 percent of all males aged 70 and over were urban dwellers. The rural dwelling males in the oldest age group showed the lowest rate for the group.

The outstanding feature of the graph is that whereas in males the highest age group the urban dwellers showed the highest rate, the reverse applied in the females, and the rural dwellers produced the higher rate. This steep rise in the rate is seen only from age 80 upwards. It is also noted that while the male rural rate was always below the urban rate, the same did not apply among females.

To further illustrate the divergence between the urban and non-urban

representation in this study a series of standardised ratios has been prepared based on the urban population, and comparing the actual numbers of cases observed with the number which would have been expected had the non-urban rate applied in the urban areas. The results of this procedure show that whereas the observed male urban cases numbered 4,063, only 2,773 would have been expected at the non-urban rate - a ratio of 147 to 100. The ratios varied in the different age groups between 106 to 100 in the ages 5-9 years to 194 to 100 in the 0-4 year group. In the observed number of females, whereas urban cases numbered 4,720, expected cases numbered 4,132, a ratio of 114 to 100. In several age groups the expected numbers were less than those observed, producing ratios of less than 100. The ratios ranged from 85 to 100 in ages 70-74 to 152 to.100 in ages 60-64; the highest ratio in females being only slightly above the average of 147 for all males. Details are shown in the following table.

Urban Representation

Number of observed cases per hundred urban cases had the non-urban rate applied in urban areas

Expected cases = 100

Age group	Males	Females
0 - 4	194	96
5 - 9	106	95
10 - 14	111	121
15 - 19	154	146
20 - 24	171	134
25 - 29	151	108
30 - 34	161	99
35 - 39	148	106
40 - 44	155	121
45 - 49	150	110
50 - 54	141	111
55 - 59	123	95
60 - 64	143	152
65 - 69	118	103
70 - 74	128	85
75 - 79	126	135
80 - 84	175	119
85 +	183	100
All ages	147	114

Another informative analysis of the urban and rural elements of the study is presented in Figure 4 which shows duration of stay in hospital. For males under the age of 35 years the average length of stay for non-urban dwellers was longer than for urban dwellers, but beyond that age, the rates vary considerably, but with a steep upward trend in the non-urban persons above 75 years of age. The duration of stay for non-urban women is less than that of urban dwellers in the age groups from the 20's to the late 50's. At older ages the non-urban women show a tendency to longer stay in hospital, reaching a peak of 152 days in hospital for persons aged 80 years. In the oldest age group, a shorter period in hospital is the average experience.

TABLE 4
PERSONS INCLUDED IN STUDY, BY AGE GROUPS AND URBAN AND NON-URBAN DOMICILE
NUMBERS AND RATES

Rates per 10,000 population

Age group in years	MALES				FEMALES			
	Numbers		Rates		Numbers		Rates	
	Urban	Non-urban	Urban	Non-urban	Urban	Non-urban	Urban	Non-urban
0 - 4	103	39	11.4	5.9	49	37	5.7	5.9
5 - 9	86	61	9.9	9.3	56	44	6.7	7.1
10 - 14	90	57	11.2	10.1	108	60	13.9	11.5
15 - 19	344	133	43.8	28.4	515	162	62.6	42.9
20 - 24	408	142	64.3	39.1	495	188	80.1	59.8
25 - 29	315	135	61.0	40.5	428	234	82.7	76.6
30 - 34	284	116	61.6	38.1	343	212	75.9	76.6
35 - 39	352	150	67.5	45.7	383	208	76.4	72.1
40 - 44	423	161	82.6	53.3	409	180	79.6	65.7
45 - 49	384	151	84.4	56.4	373	176	77.0	70.1
50 - 54	328	136	75.6	53.6	341	150	73.4	65.9
55 - 59	269	123	68.5	55.5	256	127	62.5	65.7
60 - 64	198	77	62.8	43.7	230	69	67.0	44.1
65 - 69	160	76	68.4	58.1	184	79	61.8	59.8
70 - 74	83	35	52.2	40.7	192	93	79.6	93.5
75 - 79	93	40	79.3	63.4	169	49	92.3	68.0
80 - 84	77	23	110.6	63.0	106	33	92.3	77.8
85 +	66	18	172.6	94.4	83	43	117.4	177.7
Totals	4,063	1,673	49.5	32.0	4,720	2,144	55.4	44.6

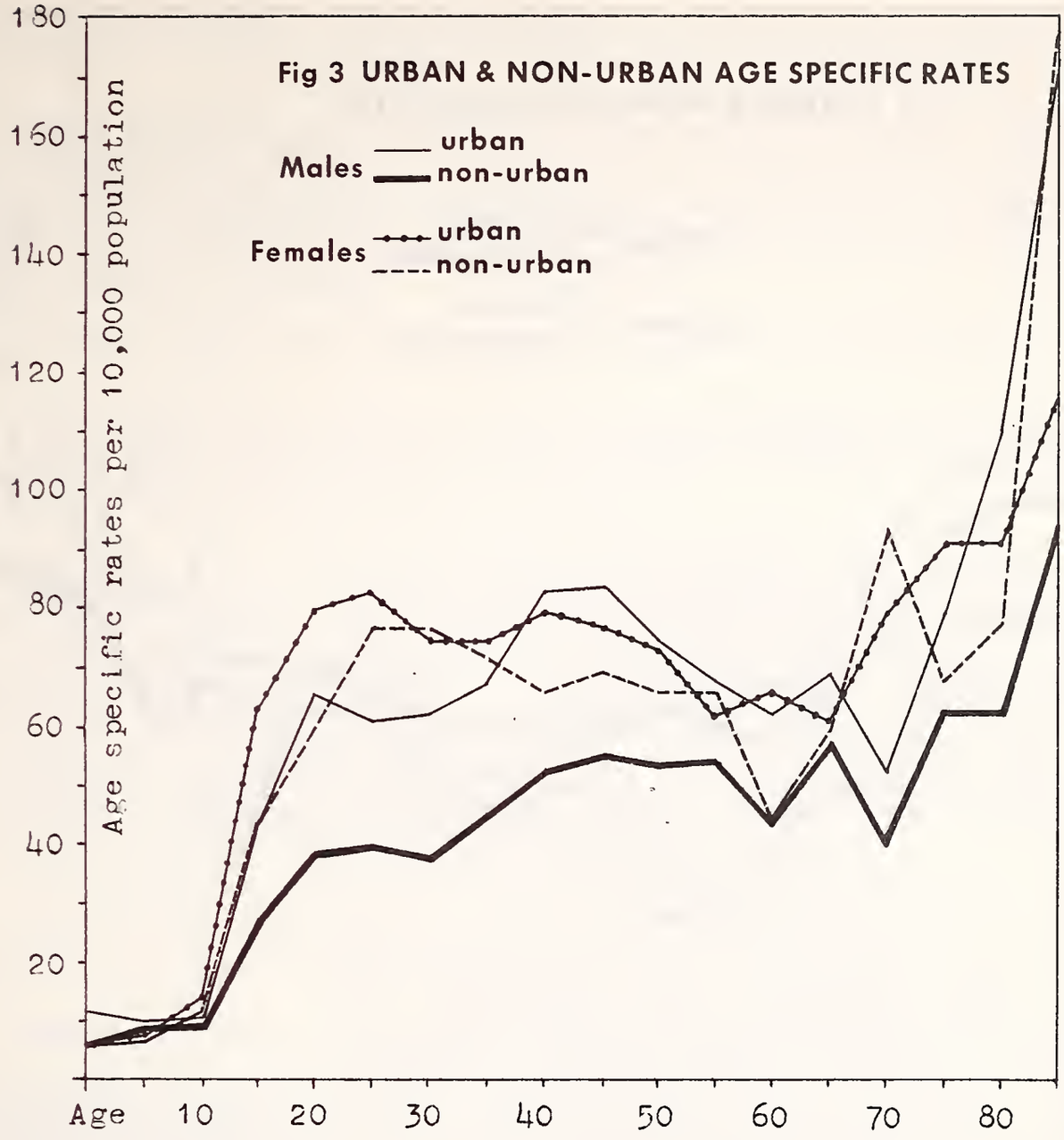


Fig 3 URBAN & NON-URBAN AGE SPECIFIC RATES
Males
urban
non-urban
Females
urban
non-urban
Age specific rates per 10,000 population
180
160
140
120
100
80
60
40
20
Age
10
20
30
40
50
60
70
80

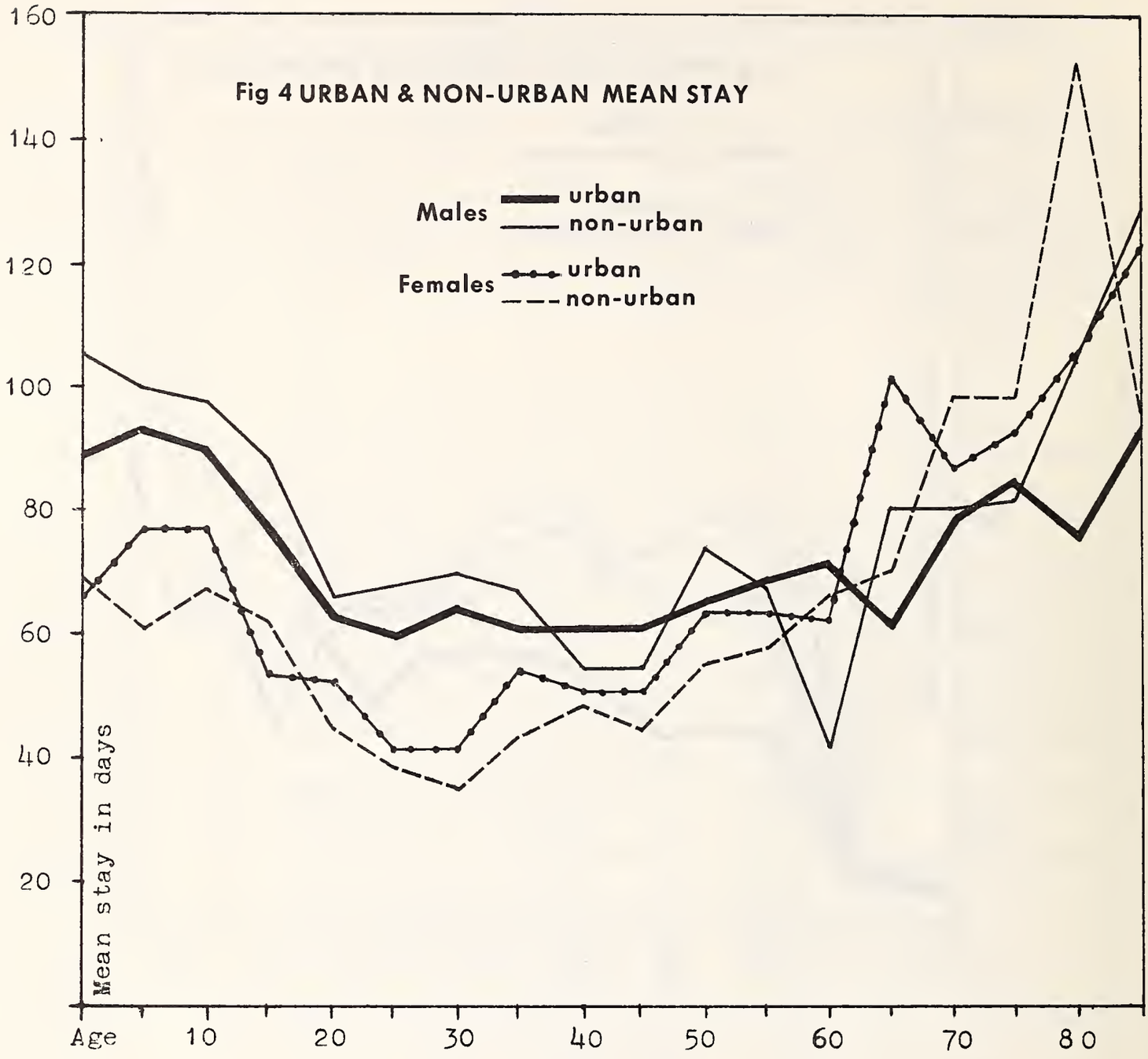


Fig 4 URBAN & NON-URBAN MEAN STAY
Males
urban
non-urban
Females
urban
non-urban
160
140
120
100
80
60
40
20
Mean stay in days
Age
10
20
30
40
50
60
70
80

OCCUPATIONS

Data about that part of the New Zealand population which is "gainfully employed" are compiled by the Department of Statistics from the five-yearly censuses of population. The classification used in presenting the results of the census has been used to classify the occupations of people included in this study who were "gainfully employed" at the time of their illness. Consequently, the information which follows does not cover such groups as students, housewives, or retired people.

Of the 12,600 persons in the study, 5,389 or 42.8 percent were "gainfully employed".

Table 5 shows the number of people in each occupation group at the time of the 1966 census (22 March 1966), the number of people in this study belonging to each occupational group, and the number of people in this study per 1,000 of the census population in each group.

In the census results individual occupations are assembled into "Major Groups" and these units are further assembled into "Divisions" of which eleven were used. In this study the individual occupations have not been tabulated: these have been assembled according to the major groups of the census. The rates computed for the groups range between 1.56 per thousand for commercial travellers to 32.23 for general labourers. Possibly both extremes could be questioned on the grounds that lack of precise definition in some cases may have caused incorrect allocation of persons to these categories. These points will be discussed later when particular groups are under examination. When the groups are assembled under division titles, rates calculated for the totals are closer to the national average of 5.25 per thousand of the total labour force.

The following table sets out numbers, rates, and percentage of total.

Census Division	1966 Census		Persons in Study		
	Total	Per-centage	Number	Per-centage	Rate per 1,000
Professional, technical and related workers	104,158	10.2	511	9.5	4.91
Administrative, executive and managerial workers	60,037	5.9	192	3.6	3.20
Clerical workers	141,046	13.7	555	10.3	3.93
Sales workers	84,521	8.2	348	6.4	4.12
Farmers, fishermen, hunters, loggers and related workers	134,417	13.1	537	10.0	4.00
Miners, quarrymen, and related workers	4,235	0.4	22	0.4	5.19
Workers in transport and communications occupations	60,954	5.9	353	6.5	5.79
Craftsmen, production process workers and labourers	355,513	34.7	2,223	41.3	6.25
Service, sport and recreation workers	65,057	6.3	612	11.4	9.41
Workers not classified by occupation	5,001	0.5	-	-	-
Armed Forces	11,100	1.1	36	0.6	3.24
Totals actually engaged	1,026,039	100.0	5,389	100.0	5.25

Three divisions are represented in the study in greater proportion than they are of the total labour force. These are - workers in transport and communications: craftsmen, production workers and labourers; and service, sport and recreation workers. In only one case, that of miners and quarrymen, was the representation the same in both study and total workforce. In all other divisions representation in the study was less.

Representation of professional and associated workers in the study falls not far short of their proportion in the total of gainfully employed workers - 9.5 and 10.2 percent respectively. Within this division, however, the rates per 1,000 workers range from 2.37 for architects and engineers to 8.44 for nurses and midwives. Lack of data prevents more detailed analysis of the latter group. Artists and writers occupy the second highest place in the division with a rate of 7.88, followed by medical practitioners and dentists with 5.67. Of the 12 groups in the division only those mentioned above showed rates above the average of 4.91 for the division as a whole. The largest group of professional workers, teachers, were represented in the study at the rate of 4.36 per thousand, a rate below the average for professional workers, and also below the average for the total labour force.

The division of administrative and executive workers was represented in the study by 192 persons or 3.20 per thousand of those recorded in the census. They represented 3.6 percent of the study and 5.9 percent of the labour force. An important factor in this division may be in the age groups represented. In the 1966 census results the division is shown as having a higher proportion than any other division in the groups aged 55 years and over.

Among clerical workers, the three groups of the division all had rates below the average for the total study, and the division as a whole provided only 10.3 percent of the persons in the study, whereas it comprised 13.7 percent of the workers at the time of the census. A factor, probably important in producing the low rate of 3.93 per thousand, is the age group of the people in this class of employment. In the census results, over one third of the 81,600 female clerical workers recorded, were under 20 years of age, only one in every eight of all clerical workers was aged 55 or over, and less than half of the latter were females.

Sales workers as a whole were shown at the census to represent 8.2 percent of the workforce. However, they comprised only 6.4 percent of the study, at a rate of 4.12 per thousand. Within this division the rates for the groups ranged from 1.56 for commercial travellers to 6.02 for salesmen in the insurance, real estate and auctioneering categories. The largest group in this division, and largest group of all workers, salesmen and shop assistants, was represented in the study by only 269 persons out of a census total of 56,450 or at the rate of 4.77 per 1,000, a rate only slightly above the average for all salesworkers, but below the average for all workers.

The division composed of farmers, fishermen, hunters and loggers is a diverse assemblage of workers comprised mainly of workers on the land. The two major groups, both consisting of workers in agriculture, produced similar rates. By combining farmers, farm managers and farm workers into a group for the agricultural industry the resultant rate is 3.8 per thousand in the census. These workers represented 12.3 percent of the gainfully employed persons at the census date, but comprised only 8.7 percent of the persons in this study. Hunters and fishermen are relatively minor groups in the labour force; their representation in the study was at the rate of 5.16 and 5.95 per thousand workers respectively.

Miners, quarrymen and related workers constitute the smallest division in the classification with only 4,235 workers recorded in the census of 1966. The 22 persons included in this study represented 5.19 per thousand, a rate close to the average for all persons in the study. As mentioned earlier, these workers were represented in the same proportion in the total labour force and in the sector of the population who made up this survey.

In the next division, workers in transport and communications, the occupations included are wide ranging in type and the rates derived vary between the two extremes of 1.92 for railway engine drivers to 16.20 for seamen. In the case of the railway engine drivers it is possible there is an understatement of numbers involved in the study. It is conceivable that some persons employed in this type of occupation have simply described themselves as "railway workers" and consequently have not been specifically recorded as engine drivers. The overall average rate for all transport workers of 5.79 despite the diversification of the division is not far removed from the average of 5.25 for all workers. The rate of 16.20 for deck and engine room ratings is the second highest in the whole study. The largest group in this division is drivers of road transport vehicles (trucks, buses, taxis, etc). Of the 34,906 persons in this category at the census, 164 were recorded in this study, or 4.70 per 1,000. The people in this group are generally of mature age, mainly males (only 532 of the 34,906 in the census being females) and 56 percent of those recorded in the census being in the age group 25-44 years. Postmen and messengers, of whom 41, of a census total of 3,076, appeared in the study, revealed the high rate of 13.33 per thousand.

A very wide range of occupations is included in the division of craftsmen, production process workers and labourers. These contributed 34.7 percent of the workers in the census, and members of these tradesmen's and labourers' categories made up 41.3 percent of the persons in the present survey. It is commonly found that correct allocation of workers to the various groups in this division is difficult. Skilled workers are readily allocated to their particular trades, but unskilled workers can frequently be recorded merely as labourers, with the result that they become non-descript when assembled in a category. In this study the extremely high rate of 32.23 per 1,000 in the census is undoubtedly an illustration of lack of sufficient information preventing many workers from being allocated to specific tradesmen's groups instead of to the "labourers NEC" class where they have been placed. A further problem in the recording of numbers of labourers both in the census and in this study, is the fact that labouring work is often casual and open to people who have found more skilled work to be less attractive, or who do this class of work as a stop-gap between more permanent jobs. The rate shown on the table is considered to be unrealistic for these reasons. The rate of 6.25 for the division as a whole is 19 per-cent above the 5.25 for the whole survey. If, however, the general labourers category is eliminated and an average for the remaining groups, the tradesmen's categories, is calculated, this is 4.05 per 1,000, a figure around which the majority of the skilled tradesmen's groups centre very closely with the single exception of painters and paperhangers, for whom a rate of 9.17 is recorded.

The division of service, sport and recreation workers is an assembly of extremely divergent types of people engaged in unrelated industries. These range from firemen and policemen to professional golfers and grave-diggers. Together the groups represented 6.3 percent of the workers in the census, but they provide 11.4 percent of the persons in this study. The overall rate for the division, 9.41 per 1,000 is high. Within the division the rates vary from 2.74 for firemen and policemen to 13.96 for housekeepers and related workers. The very low rate for firemen, policemen and guards is no doubt a realistic one for an assembly of personnel employed in occupations where physical fitness is essential and where mental stability is a pre-requisite for those selected for training. It is also a group containing few in older age groups. It is likely that the group "housekeepers, cooks, maids and related workers" is considerably under-reported. This was caused through a deficiency in the coding procedure used to classify mental hospital admission in 1967 when the distinction between those women engaged as domestics or housekeepers, and those housewives engaged in domestic duties, was not always clearly indicated when the data were recorded. It has been possible subsequently to refer to the basic documents in most, but not all, of the cases assigned to this occupational group. Where confirmation was obtained that the person was not a housewife the case has been included in this occupational group. Where confirmation was not possible the case was not included. This means that an unknown number of people who should have been included in this occupational group have been

excluded and the rate of 13.96 per thousand, which, even without these, is a high one, is certainly under-stated.

A relatively high rate of 9.37 per thousand workers is recorded for waiters, bartenders and similar occupations. Features of this group in the census results are that one-third of all the waitresses are girls under 20 years of age, a factor which may have significance in relation to the number of persons in this occupation included in the study. A slightly higher rate than for the waiter and bartender group is that for laundry workers for whom a rate of 9.69 is shown. An even higher rate of 11.98 is recorded for the final group of assorted service workers. Although the group contains a wide selection of types of employment, including such people as ladies' companions, tourist guides, mannequins and circus workers, the census results show that nurse aids, doctors' and dentists' receptionists and hospital attendants make up 79 percent of the total.

Of the 11,100 persons in the armed forces in New Zealand at the date of the 1966 census, only 36. or 3.24 per thousand, were among the persons included in this study and is probably a reflection of the procedures used in selecting people for training and of the age structure of the occupation group. This is the lowest rate for any division of the classification. The 11,100 forces personnel represent 1.1 per cent of the workers of the groups included in the survey, and the 36 are a small 0.6 percent of persons in the study.

TABLE 5 : MENTAL ILLNESS BY OCCUPATION: NUMBERS AND RATES

Occupation - Census Major Group	Census total	Number in study	Rate per 1,000
Architects, engineers, surveyors	5,915	14	2.37
Chemists, physicists, geologists	1,257	3	2.39
Biologists, veterinarians, and related scientists	1,407	4	2.84
Physicians, surgeons, dentists	3,702	21	5.67
Nurses and midwives	19,075	161	8.44
Professional medical workers	4,497	19	4.23
Teachers	34,658	151	4.36
Clergy and religious orders	3,836	10	2.61
Jurists	2,433	10	4.11
Artists, writers, and related workers	5,455	43	7.88
Draughtsmen, engineering technicians	9,461	35	3.70
Other professional workers	12,462	40	3.21
Administrative, executive officials - government	1,559	1	0.64
Directors, managers	58,478	191	3.27
Bookkeepers and cashiers	6,907	16	2.32
Stenographers and typists	26,163	87	3.33
Other clerical workers	107,976	452	4.19
Working proprietors, wholesale and retail trades	7,237	22	3.04
Insurance, real estate, salesmen	5,482	33	6.02
Commercial travellers	15,352	24	1.56
Salesmen, shop assistants	56,450	269	4.77
Farmers and farm managers	76,177	260	3.41
Farm workers	49,991	218	4.36
Hunters and related workers	1,163	6	5.16
Fishermen	1,850	11	5.95
Loggers and forestry workers	5,236	42	8.02
Miners and quarrymen	2,923	19	6.50
Well drillers	304	-	-
Mineral treaters	199	-	-
Mine and quarry workers N.E.C.	809	3	3.71
Deck officers, engineer officers and pilots(ship)	1,701	9	5.29
Deck and engine room ratings	3,148	51	16.20
Aircraft pilots, navigators and flight engineers	941	3	3.19
Drivers and firemen (railway engines)	2,086	4	1.92
Drivers, road transport	34,906	164	4.70
Guards and brakemen - railways	624	7	11.22

TABLE 5 : MENTAL ILLNESS BY OCCUPATION: NUMBERS AND RATES - continued

Occupation - Census Major Group	Census total	Number in study	Rate per 1,000
Inspectors, supervisors, traffic controllers and despatchers - transport	5,219	25	4.79
Telephone and telegraph workers	7,947	44	5.54
Postmen and messengers	3,076	41	13.33
Other transport workers	1,306	5	3.83
Spinners, weavers, knitters, dyers	10,936	29	2.65
Tailors, cutters, furriers	23,761	73	3.07
Leather workers	5,523	23	4.16
Furnacemen and related metal making workers	3,047	8	2.63
Precision instrument makers, watchmakers, jewellers	2,101	7	3.33
Toolmakers, machinists, plumbers, welders, platers	72,745	331	4.55
Electricians	27,570	82	2.97
Carpenters, wood-workers	47,575	175	3.68
Painters and paperhangers	12,317	113	9.17
Bricklayers and plasterers	12,675	58	4.58
Compositors, pressmen, engravers, bookbinders	9,294	32	3.44
Potters, glass and clay workers	2,510	8	3.19
Millers, brewers, bakers	30,401	139	4.57
Chemical workers	5,212	9	1.73
Tobacco workers	636	-	-
Craftsmen and production process workers N.E.C.	13,617	39	2.86
Packers, labellers and related workers	6,265	19	3.03
Stationary engine, excavating and lifting equipment operators	12,396	37	2.98
Waterside workers	29,191	147	5.04
Labourers N.E.C.	27,741	894	32.23
Firemen, policemen and guards	5,469	15	2.74
Housekeepers, cooks, maids	19,981	279	13.96
Waiters, bartenders and related workers	10,784	101	9.37
Building caretakers and cleaners	8,169	34	4.16
Barbers, hairdressers, beauticians	6,070	29	4.78
Launderers, drycleaners and pressers	3,819	37	9.69
Athletes, sportsmen and related workers	1,117	6	5.37
Photographers and related camera operators	1,126	12	10.66
Embalmers and undertakers	344	1	2.91
Service, sport and recreation workers, N.E.C.	8,178	98	11.98
Workers not classifiable by occupation	5,001	-	-
Armed Forces	11,100	36	3.24
Totals	1,026,039	5,389	5.25

OCCUPATIONS BY DIAGNOSIS

Table 6 sets out the types of mental illness affecting the 5,389 gainfully employed persons included in this study, and shows in respect of the diagnoses listed the number of expected and observed cases in each occupation. The diagnoses used for the classification are the fourteen headings of the "short list" used in the "Mental Health Data" reports. This study, however, uses a condensed series of eight headings, the fourteen being combined as follows:

Headings in this study	"Short list" headings
Alcoholism	Alcoholic psychosis Alcoholism
Schizophrenia	Schizophrenia and paranoid states
Depressive psychosis	Depressive psychosis
Other functional psychoses	Other functional psychoses
Depressive neurosis	Depressive neurosis
Other neuroses	Other neuroses and psychosomatic disorders
Other personality disorders	Other personality disorders
Other	Senile and pre-senile dementia Other organic psychoses Transient situational disturbances and behaviour disorders of children Non-psychotic mental disorders associated with physical condition Mental retardation No psychiatric diagnosis (includes observation)

The expected number of cases has been calculated as the number which would have been observed if each occupational group had contributed to the grand total in the same proportion it occupied in the total of gainfully employed persons at the 1966 census. The relativity between expected and observed cases varies considerably from group to group, and from division to division.

Although Table 6 sets out the figures for both expected and actual number of cases for each diagnosis in every occupation group, relativity between these figures should be examined with caution especially for those groups in which very small numbers are recorded. In the comments which follow, only important divisions and groups will be discussed.

The following table summarises the totals of expected and observed cases in each division of the classification and shows the number of observed cases per 100 expected.

Division	Expected	Observed	Observed cases per 100 expected
Professional, technical and related workers	539	511	95
Administrative, executive and managerial workers	316	192	61
Clerical workers	740	555	75
Sales workers	443	348	79
Farmers, fishermen, hunters, loggers and related workers	706	537	76
Miners, quarrymen, and related workers	20	22	110
Workers in transport and communications	317	353	111
Craftsmen, production process workers and labourers	1,863	2,223	119
Service, sport and recreation workers	343	612	178
Workers not classified by occupation	26	-	-
Armed Forces	58	36	62

The diagnoses affecting these results will be discussed under each division, and their important occupation groups.

The division of professional and technical workers provided 9.5 percent of the persons included in this study, and 10.0 percent of the expected cases. Of the 12 groups in the division, 9 had fewer cases than expected, and of the remaining three, only one, nurses and midwives had a substantial number more than expected. This latter group, together with teachers, comprise 60 percent of the division. In both of these the numbers of recorded cases of alcoholism per 100 expected were very low, 30 and 14 respectively. Among nurses and midwives, other neuroses, depressive psychosis and other functional psychoses ranked high with 320, 238 and 275 cases per 100 expected respectively. Among the teachers, depressive psychosis headed the list of diagnoses with 153 recorded cases per 100 expected.

In the next division, administrative, executive and managerial workers only the group of directors and managers is numerically important. This division recorded the lowest ratio of observed to expected cases - 61 per 100 expected. In the comment on occupations it was pointed out that in this division there was a higher percentage of persons in the age groups of 55 years and over than in any other division of the classification.

Of clerical workers, stenographers and typists, and other clerical workers, comprise 97 percent of the total, the remaining group, bookkeepers and cashiers being of minor numerical importance. Among typists the very low rate of alcoholism is noticeable - 28 cases expected, but only 2 observed. In only one diagnostic group, other neuroses, was the number of observed cases greater than expected. It is pointed out, however, in connection with alcoholism that at the 1966 census 41 percent of all typists were girls under 20 years of age, to whom the sale of alcoholic liquor would have been illegal. Among clerks in general the number of cases of alcoholism was less than half that expected, and in only one diagnosis, depressive psychosis, was the recorded number more than marginally above those expected.

In the division of sales workers 443 cases were expected as against 348 observed, a rate of 79 per hundred expected. Among commercial travellers it is seen that in every diagnostic category the number observed was less than expected, only 24 out of an expected 81. Salesmen and shop assistants, the great bulk of sales workers, recorded 269 out of a total expected of 296 - a rate of 91 per hundred.

Farmers and farm workers, who comprise the major part of the next division, recorded between them 478 cases of an expected total of 662 or 72 per 100. Except for functional psychoses among farmers and farm managers, and schizophrenia among farm workers, fewer cases were recorded in every diagnostic category than were expected.

The division of miners and related workers is not large, containing only 0.4 percent of the labour force. Only 20 cases were expected but 22 recorded, a rate of 110 per hundred, but of little significance in view of the small number involved.

Among transport workers the number of expected cases was exceeded only slightly by those recorded in the study. Although the numbers involved were not great, the principal contributors to this excess were seamen and postmen. The former, with 51 recorded cases to 16 expected, and the latter with 41 to 16 expected. Among drivers of road transport, the most numerous group in the division, the position was reversed with 184 expected to only 164 recorded. Alcoholism amongst seamen and schizophrenia among postmen were the chief factors involved. In this group the number of observed cases of alcoholism was less than that expected.

In the division of craftsmen, production process workers and labourers 2,223 persons were included in this study. The expected figure was only 1,863. The resultant ratio of 119 recorded per 100 expected, was mainly the result of the position revealed among general labourers, of whom 894 were included in the study while only 145 were expected. In this group alcoholism was the outstanding diagnostic category with 218 recorded but only 29 expected. Amongst watersiders, of whom overall diagnoses 152 cases were expected and 147 were recorded, alcoholism was also the outstanding feature. There were 44 cases of alcoholism among these workers compared with 31 expected. Among the other groups of tradesmen the only group warranting special comment were carpenters with 248 cases expected but only 175 recorded. In no diagnostic category were more cases recorded than expected.

Personnel engaged in the service, sport and recreation division had the highest proportion of observed cases to expected - 178 to 100. The principal contributors to this excess were housekeepers, cooks and maids with 279 recorded compared with 104 expected. Waiters and bartenders also made a substantial contribution with 101 recorded but only 57 expected. In both these cases alcoholism was a major factor, but with the housekeepers and associated workers the number observed was more than twice that expected except in the case of "other functional psychoses".

In the armed forces the numbers expected exceeded those observed in all diagnostic groups.

TABLE 6 : MENTAL ILLNESS BY OCCUPATION AND DIAGNOSIS

Occupation - Census Major Group	Census total	Diagnoses																	
		Alcoholism		Schizophrenia		Depressive psychosis		Other functional psychoses		Depressive neurosis		Other neuroses		Other personality disorders		Other		TOTAL	
		Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
TOTALS:	1,026,039	1,080	1,080	960	956	456	457	211	215	634	636	565	568	475	476	990	1,001	5,371	5,389
Architects, engineers, surveyors	5,915	6	2	6	3	3	-	1	-	4	5	3	1	3	-	6	3	32	14
Chemists, physicists, geologists	1,257	1	-	1	-	1	-	-	-	1	1	1	2	1	-	1	-	7	3
Biologists, veterinarians, and related scientists	1,407	1	1	1	2	1	-	-	-	1	-	1	-	1	-	1	1	7	4
Physicians, surgeons, dentists	3,702	4	7	3	1	2	2	1	2	2	4	2	1	2	1	4	3	20	21
Nurses and midwives	19,075	20	6	18	26	8	19	4	11	12	17	10	32	9	17	11	33	92	161
Professional medical workers	4,497	5	4	4	3	2	2	1	2	3	3	2	1	2	1	4	3	23	19
Teachers	34,658	36	5	32	44	15	23	7	8	21	15	19	26	16	13	34	17	180	151
Clergy and religious orders	3,836	4	-	4	-	2	4	1	1	2	2	2	2	2	-	4	1	21	10
Jurists	2,433	3	2	2	2	1	1	1	1	2	1	1	-	1	-	2	3	13	10
Artists, writers, and related workers	5,455	6	9	5	7	2	3	1	2	3	7	3	5	3	2	5	8	28	43
Draughtsmen, engineering technicians	9,461	10	2	9	9	4	-	2	-	6	7	5	2	4	4	9	11	49	35
Other professional workers	12,462	13	10	12	6	6	4	3	2	8	4	7	7	6	1	12	6	67	40
Administrative, executive officials - government	1,559	2	-	1	-	1	-	-	-	1	-	1	1	1	-	2	-	9	1
Directors, managers	58,478	62	52	55	15	26	22	12	2	36	27	32	34	27	7	57	32	307	191
Bookkeepers and cashiers	6,907	7	2	6	1	3	3	1	1	4	4	4	2	3	-	7	3	35	16
Stenographers and typists	26,163	28	2	24	20	12	5	5	4	16	13	14	16	12	12	26	15	137	87
Other clerical workers	107,976	114	56	101	81	48	58	23	24	67	70	60	60	50	31	105	72	568	452
Working proprietors, wholesale and retail trades	7,237	8	5	7	-	3	6	2	1	4	1	4	5	3	1	7	3	38	22
Insurance, real estate, salesmen	5,482	6	8	5	2	2	2	1	1	3	6	3	3	3	2	5	9	28	33
Commercial travellers	15,352	16	4	14	4	7	1	3	-	10	8	9	2	7	2	15	3	81	24
Salesmen, shop assistants	56,450	59	46	53	42	25	18	12	14	35	34	31	38	26	29	55	48	296	269
Farmers, farm managers	76,177	80	45	71	42	34	27	16	23	47	32	42	23	35	14	74	54	399	260
Farm workers	49,991	53	39	47	62	22	13	10	4	31	21	28	11	23	20	49	48	263	218
Hunters, and related workers	1,163	1	3	1	-	1	1	-	-	1	1	1	-	1	-	1	1	7	6
Fishermen	1,850	2	6	2	-	1	-	-	-	1	1	1	1	1	2	2	1	10	11
Loggers and forestry workers	5,236	6	11	5	9	2	1	1	3	3	4	3	-	2	3	5	11	27	42
Miners and quarrymen	2,923	3	8	3	2	1	-	1	-	2	2	2	3	1	1	3	3	16	19
Well drillers	304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mineral treaters	199	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mine and quarry workers N.E.C.	809	1	-	1	2	-	-	-	-	1	-	-	-	-	1	1	-	4	3
Deck officers, engineer officers and pilots(ships)	1,701	2	2	2	1	1	-	-	-	1	2	1	1	1	2	2	1	10	9
Deck and engine room ratings	3,148	3	28	3	4	1	3	1	1	2	5	2	1	1	3	3	6	16	51
Aircraft pilots, navigators and flight engineers	941	1	-	1	-	-	-	-	-	-	-	-	-	-	1	1	2	3	3
Drivers and firemen (railway engines)	2,086	2	1	2	-	1	-	-	-	1	1	1	1	1	1	2	-	10	4
Drivers, road transport	34,906	37	36	33	18	16	6	7	4	22	27	19	23	16	18	34	32	184	164
Guards and brakemen - railways	624	1	2	1	1	-	-	-	2	-	1	-	1	-	-	1	-	3	7
Inspectors, supervisors, traffic controllers and despatchers - transport	5,219	5	4	5	5	2	5	1	5	3	1	3	-	2	1	5	4	26	25
Telephone and telegraph workers	7,947	8	2	7	8	4	5	2	1	5	10	4	5	4	5	8	8	42	44
Postmen and messengers	3,076	3	3	3	12	1	3	1	3	2	5	2	2	1	3	3	10	16	41
Other transport workers	1,306	1	1	1	-	1	-	-	1	1	1	1	-	1	2	1	-	7	5

TABLE 6 : MENTAL ILLNESS BY OCCUPATION AND DIAGNOSIS - continued

Occupation - Census Major Group	Census total	Diagnoses																	
		Alcoholism		Schizophrenia		Depressive psychosis		Other functional psychoses		Depressive neurosis		Other neuroses		Other personality disorders		Other		TOTAL	
		Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
Spinners, weavers, knitters, dyers	10,936	12	5	10	3	5	4	2	-	7	3	6	3	5	5	11	6	58	29
Tailors, cutters, furriers	23,761	25	3	22	20	11	2	5	4	15	12	13	7	11	7	23	18	125	73
Leather workers	5,523	6	5	5	5	2	3	1	-	3	1	3	-	3	1	5	8	28	23
Furnacemen and related metal making workers	3,047	3	2	3	1	1	-	1	-	2	-	2	-	1	2	3	3	16	8
Precision instrument makers, watchmakers, jewellers	2,101	2	-	2	1	1	1	-	-	1	3	1	1	1	1	2	-	10	7
Toolmakers, machinists,plumbers,welders, platers	72,745	77	78	68	49	33	18	15	11	45	49	40	38	34	31	70	57	382	331
Electricians	27,570	29	16	26	15	12	4	6	5	17	10	15	12	13	6	27	14	145	82
Carpenters, wood-workers	47,575	50	37	44	34	21	18	10	10	29	18	26	18	22	7	46	33	248	175
Painters and paperhangers	12,317	13	44	11	18	5	8	3	2	8	12	7	3	6	8	12	18	65	113
Bricklayers and plasterers	12,675	13	14	12	4	6	2	3	1	8	6	7	8	6	4	12	19	67	58
Compositors, pressmen, engravers, bookbinders	9,294	10	7	9	6	4	3	2	1	6	2	5	4	4	3	9	6	49	32
Potters, glass and clay workers	2,510	3	2	2	2	1	1	1	1	2	1	1	-	1	-	2	1	13	8
Millers, brewers, bakers	30,401	32	42	28	19	14	13	6	6	19	17	17	11	14	8	30	23	160	139
Chemical workers	5,212	5	2	5	-	2	-	1	-	3	1	3	-	2	-	5	6	26	9
Tobacco workers	636	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	3	-
Craftsmen and production process workers N.E.C.	13,617	14	8	13	8	6	3	3	1	8	6	8	3	6	3	13	7	71	39
Packers, labellers and related workers	6,265	7	2	6	4	3	3	1	1	4	1	3	-	3	5	6	3	33	19
Stationary engine, excavating and lifting equipment operators	12,396	13	7	12	11	6	3	3	-	8	9	7	2	6	3	12	2	67	37
Waterside workers	29,191	31	44	27	18	13	10	6	4	18	13	16	15	13	13	28	30	152	147
Labourers, N.E.C.	27,741	29	218	26	196	12	57	6	29	17	66	15	51	13	107	27	170	145	894
Firemen, policemen and guards	5,469	6	4	5	2	2	-	1	1	3	2	3	2	3	-	5	4	28	15
Housekeepers, cooks, maids	19,981	21	48	19	65	9	38	4	6	12	25	11	27	9	22	19	48	104	279
Waiters, bartenders and related workers	10,784	11	33	10	10	5	6	2	1	7	11	6	15	5	6	11	19	57	101
Building caretakers and cleaners	8,169	9	11	8	5	4	9	1	2	5	2	5	3	4	-	8	2	44	34
Barbers, hairdressers, beauticians	6,070	6	5	6	3	3	2	1	1	4	2	3	4	3	5	6	7	32	29
Launderers, drycleaners and pressers	3,819	4	4	4	6	2	4	1	-	2	3	2	5	2	7	4	8	21	37
Athletes, sportsmen and related workers	1,117	1	2	1	-	-	1	-	-	1	1	1	-	1	1	1	1	6	6
Photographers and related camera operators	1,126	1	2	1	1	-	1	-	-	1	1	1	2	1	-	1	5	6	12
Embalmers and undertakers	344	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Service, sport, recreation workers N.E.C.	8,178	9	14	8	15	4	4	2	4	5	10	5	15	4	14	8	22	45	98
Workers not classifiable by occupation	5,001	5	-	5	-	2	-	1	-	3	-	3	-	2	-	5	-	26	-
Armed Forces	11,100	12	7	10	1	5	2	2	1	7	5	6	7	5	7	11	6	58	36

SUICIDE, ATTEMPTED SUICIDE AND SELF-INFLICTED INJURY

The people in this study include two important groups not always represented in studies of psychiatric illness: people who are admitted to public hospitals because of self-inflicted injuries but who are not seen by a psychiatrist, and those who die from self-inflicted injuries before admission to hospital. If a psychiatric unit is attached to a public hospital many patients with self-inflicted injuries will be transferred to the unit once the immediate threat to life has passed. As a consequence, reports on people transferred will be included in psychiatric inpatient statistics as routine.

Of the 1,698 people reported with self-inflicted injuries, 913 or 54.1 percent were admitted to public hospitals which did not have psychiatric units, and 211 or 12.5 percent died before admission. These two categories together made up exactly two-thirds of all self-inflicted injury cases. Although for most of these cases a psychiatric diagnosis was not made, it has been assumed that the non-accidental self-infliction of injuries is sufficient indication of the need for psychiatric care whether or not a psychiatric diagnosis has been made. A large number of the self-inflicted injury cases involves over-dosage of drugs. Most, but not all, of these are likely to be serious attempts although a proportion would no doubt be more appropriately designated as suicidal gestures. As manifestations of psychiatric illness, however, there is little point in attempting to distinguish between the two. Serious attempts and gestures alike can result in death.

The inclusion of these people poses a problem in terminology which, in the following commentary an endeavour has been made to overcome by describing the complete group as those with self-inflicted injuries. The two sub-groups cover those who died as the result of the injuries (suicides) and those who did not die (attempted suicides).

The study of suicide raises the question of validity of data. "How accurately do the numbers of deaths assigned to suicide reflect the number of suicides that actually occurred?" In many cases the intention of a person to take his own life is clearly indicated by the means he adopts or by the leaving of a letter. In other cases the intention of the deceased person is not so clear. Another factor which affects the validity of suicide figures is the manner in which the coroner's verdict is worded. For a variety of reasons, therefore, unless it is stated that the death was due to the intentional self-infliction of injury, there is the danger that suicides will be under-reported. As a counter, it is the practice in New Zealand to routinely refer to the coroner's papers for all violent deaths except those stated to be due to accident, suicide or homicide or to involve infants. In this way the possibility of a suicide being assigned to some other cause of death because of the coroner's choice of words is considerably reduced.

Of the 12,600 people in the study, 1,698 or 13.5 percent involved self-inflicted injuries. This proportion is equivalent to between one-seventh and one-eighth of all the people in the study. Under half (44.0 percent) had a psychiatric diagnosis. The numbers and age-specific rates are shown in Table 7 and the age-specific rates for males and for females are shown in Figure 5.

Females outnumbered males by nearly 2 to 1. For males the rate was 44.6 per 100,000 population. For females it was 82.4 per 100,000 population. As all but 30 of the cases were reported in people aged 15 years and over, a more realistic rate is obtained by relating the number of cases aged 15 years and over to the New Zealand population in the same range of ages. When restricted to the population aged 15 years and over the rates were 66.0 per 100,000 for males and 118.6 per 100,000 for females.

The age-specific rates for males and females had distinctive patterns. The high point for males was 92.4 per 100,000 population at ages 20 to 24 years. From this point onward the rates for all male age groups except two, ranged between the low 50's to the high 70's. The exceptions were the two low points for 50 to 54 years and for 70-74 years. It should be noted that the very low rate for males aged 70-74 years was also shown when the age-specific rates for males in the study irrespective of diagnosis were reviewed. To summarise, the pattern for males was for rates at a fairly consistent level for all ages with a peak at 20-24 years, and two low points at 50-54 years and 70-74 years.

Although the highest age-specific rate for females was also at the 20-24 years mark, there were few other similarities between the male and female age-specific rates. The rate for that age group was 213.4 per 100,000, which is equivalent to one in every 470 females in the population aged 20-24 years. The rate per 100,000 was more than twice as high as that for males (92.4 for males: 213.4 for females). The rates for age groups on either side of 20-24 years were also very high - 175.8 per 100,000 for 15-19 years and 173.7 per 100,000 for 25-29 years. The rates fell from this point and stabilised for ages between 30-44 years, in the vicinity of 120 per 100,000. From this point the trend was downwards.

When the male and female rates are compared it can be seen that the female rates were twice as high as the male rates from the late teens until the 30's, they were still markedly higher from the 30's to the early 40's, they were at about the same level as those for males from the late 40's until the late 70's and from then on were lower than those for males.

Regional rates

Table 8 shows the numbers and rates of persons aged 15 years and over in the study who had self-inflicted injuries. The information is shown according to the hospital district in which the patient lived at the time of the attempt.

Seven districts had rates which were higher than the New Zealand average. Four of these contained the larger population centres of Auckland, Wellington, Christchurch and Dunedin. The remaining three were all situated on the East Coast of the North Island - Cook, Wairoa and Dannevirke, Cook having the highest rate in New Zealand (14.9 per 10,000 population aged 15 years and over).

It is tempting to try to identify the reasons for these high East Coast rates. The demographic features of the population at risk in the area, the availability of psychiatric treatment facilities, and the completeness with which all cases are reported are all factors which could have some bearing on the high rates, but before the formulation of hypotheses investing the East Coast and its inhabitants with various predisposing characteristics it is well to bear in mind that in two other East Coast districts - Opotiki and Waiapu - no cases were reported at all.

Maniototo was another district from which no case was reported and Vincent reported only one. Both districts, however, have very small populations.

Number of attempts

The number of episodes of self-inflicted injury for each person reported during 1967 was noted. Of the 1,698 cases, 1,645 or 96.9 percent were reported on one occasion only; 51 (or 3 percent) were reported twice. One person was reported three times and one four times. It should be pointed out that these figures do not show the total of attempts made during their lifetime by the people in the study, but only the number of attempts reported during the one year reviewed.

There was little difference in the frequency with which Maoris and non-Maoris were involved in multiple attempts. Two Maoris, of a total of 107, made more than one attempt (1.9 percent) and 51 non-Maoris of a total of 1,591 made more than one attempt (3.2 percent).

Comparison of suicides and attempted suicides

The 1,698 people reported with self-inflicted injuries were made up of 275 people whose deaths resulted from the injuries and 1,423 who survived the attempt. The percentage of deaths was 16.3 or one death in each 6 persons reported. It should be noted that this relationship has been based on persons, not attempts - 53 persons in the study were reported on more than one occasion during 1967 as having self-inflicted injuries.

A marked difference shows in the way the sexes in the two groups were affected. Of those who died 191 or 69.5 percent were males; of those who did not die 1,016 or 71.4 percent were females. The numbers and rates are shown in Table 9 and the rates are illustrated in Figures 6 and 7.

The age-specific rates for males who died were higher than those for females, except for ages 70 to 74 years. As mentioned elsewhere in this report the rates for males in the 70-74 year age group have been found to be very much lower than the rates for the age groups on either side of 70-74 years. It is unlikely, therefore, that the low rate here has particular meaning. If it is assumed that this rate is atypical, a higher rate for males at all age groups can be claimed.

The rates for females who died increased quite steadily up to 2.9 per 10,000 at the 70-74 years level. From this point the rate fell sharply to a level equivalent to that of the ages 45-55. The pattern of age-specific rates for males was not so regular, rising and falling as age increased to reach a peak of 3.9 per 10,000 for ages 75-79 years. The overall pattern was for much higher death rates for males, particularly for ages between 20 and 44 years.

The age-specific rate profiles for attempted suicides showed a very different structure. The dominating feature was the extremely high rates for females between 15 and 29 years. For those aged between 20 and 24 years the rate was 21.0 per 10,000 which was equivalent to 1 in each 473 women in this age group. The highest rate for male attempts was also for 20-24 years, but the rate of 7.5 per 10,000 was approximately only one-third as high as the rate for females.

Age

The mean age of men who died was 45.9 years. For women the mean age was higher at 53.2 years. The position was reversed for attempted suicide. The mean age for males was higher at 36.2 years, whereas that for females was 27.1 years. An indication of the extent to which young women were represented in those people who attempted suicide can be obtained when it is seen that 38.2 percent or approximately 4 out of every 10 involved females aged between 15 and 24 years.

The way in which the outcomes of attempts differ according to the age and sex of the person involved is shown very clearly in the table which follows. The numbers of deaths are shown according to each 100 people of the same age and sex involved in attempts.

The percentage of deaths in people aged 70 years and over are not shown by five-year age groups. They have been aggregated because the numbers were small and because the rates showed no consistent trend.

Number of deaths per 100 people aged 15 years and over with self-inflicted injuries

Age	Males	Females	Both sexes
15-	11	2	4
20-	19	2	7
25-	16	1	6
30-	31	7	16
35-	41	2	18
40-	37	6	18
45-	27	14	20
50-	44	20	30
55-	55	21	37
60-	52	31	42
65-	42	43	43
70+	54	41	46
All ages 15 years and over	32	8	16

Should the percentages in the table be used as an approximation of the chances of a suicide attempt ending in death, it is necessary to remember that the percentages have been calculated on the basis of people involved in reported attempts. The fact that some of these people were involved in more than one attempt during 1967 has not been taken into account. It is also important to remember that the calculations refer to people about whom reports of self-inflicted injuries were received. An unknown number of people would be involved in suicide attempts which, for a great many reasons, did not result in a period of hospitalisation. The percentages recorded in the above table do not purport to show the chances of death in all cases of attempted suicide occurring in New Zealand in 1967 but only the number of deaths in relation to the number of people whose self-inflicted injuries resulted in admission to hospital.

Whereas one male died in every three males with self-inflicted injuries, the proportion for females was only one death in every 12 females involved. For both sexes the chance of death as the outcome of an attempt increased with age. For males aged 15 to 19 years the likelihood of death was 1 in 9. For men in their late fifties there was a greater likelihood of death than recovery. For females the chance of death was usually at the one in 50 level for ages below 40, although 7 out of each 100 women involved in the 30-34 years group died. For women in their late 60's and over, the likelihood of death was 2 deaths in every 5 women attempting suicide.

Self-inflicted injuries in people living in urban areas and elsewhere by age and sex

Numbers and rates per 10,000 population

Age	Urban areas				Non-urban areas			
	Males		Females		Males		Females	
	Numbers	Rates	Numbers	Rates	Numbers	Rates	Numbers	Rates
10-	6	0.8	16	2.1	1	0.2	7	1.3
15-	46	5.9	174	21.2	10	2.1	37	9.8
20-	75	12.3	164	26.5	15	4.1	35	11.1
25-	42	8.1	105	20.3	14	4.2	38	12.4
30-	37	8.0	58	12.8	11	3.6	29	10.5
35-	49	9.4	75	15.0	15	4.6	20	6.9
40-	50	9.8	77	15.0	12	4.0	21	7.7
45-	44	9.7	54	11.2	12	4.5	15	6.0
50-	25	5.8	38	8.2	9	3.5	8	3.5
55-	31	7.9	35	8.5	9	4.1	8	4.1
60-	21	6.7	22	6.4	10	5.7	4	2.6
65-	18	7.7	16	5.4	8	6.1	5	3.8
70-	4	2.5	20	8.3	4	4.7	2	2.0
75-	7	6.0	10	5.5	3	4.8	3	4.2
80-	7	10.1	3	2.6	-	-	-	-
85+	3	7.8	-	-	-	-	1	4.1
All ages 10 years and over	465	7.2	867	12.7	133	3.4	233	6.5

The table above shows the numbers and rates per 10,000 people living in urban areas and elsewhere who had self-inflicted injuries. The rates are also shown in Figures 8 and 9. Self-inflicted injuries were more frequently reported in people living in urban areas than in people living elsewhere. The rates for urban area females followed the national pattern of a very high peak for ages 20-24 years. The rate was 26.5 per 10,000. The age-specific rates on either side of this age group were also very high - 21.2 per 10,000 for 15-19 years and 20.3 per 10,000 for 25-29 years. The most interesting feature of the table, however, is not the extremely high rate for urban area females, but the fact that urban area males generally had higher rates than females living elsewhere. The non-urban area rates for females were generally higher than urban area rates for females at ages below 35 years but from this point onwards the male urban area rates were higher. The rates for males living in places other than urban areas were lower than those for urban area males, particularly for ages below 50, where the urban area rates were twice as high as those for non-urban area residents.

When the urban area and non-urban area figures for each sex were further subdivided into suicides and attempts (see below) it was evident that whereas the suicide rates for males, whether living in urban areas or elsewhere, were at best twice as high as those for females living in urban areas or elsewhere, the attempted suicide rates for urban area dwellers were, sex by sex, at least twice as high as those for people living in non-urban areas.

Two further interesting points are also shown in the figures below. For males, although the attempted suicide rate for urban area dwellers

(5.3 per 10,000) was more than twice as high as that for male suicides living in urban areas (2.0 per 10,000) there was no difference at all between the suicide (1.7 per 10,000) and attempted suicide (1.7 per 10,000) rates for males living in non-urban areas. The second point concerns attempted suicides alone. The rate for urban area females (11.8 per 10,000) was twice as high as that for non-urban area females (5.9 per 10,000) and was also twice as high as that for urban area males (5.3 per 10,000). On the other hand the rate for non-urban area males (1.7 per 10,000) was in the vicinity of only a seventh as high as that for urban area females.

These figures suggest that the greater risk of self-inflicted injury reported in people living in urban areas concerns suicide attempts rather than suicide attempts resulting in death.

The rates are set out in the following table.

Suicide and attempted suicide by sexes, and urban and non-urban areas

Rates per 10,000 population

Sex	Area	Suicides	Attempted suicides	Suicides and attempted suicides
Males	Urban area	2.0	5.3	7.2
	Non-urban area	1.7	1.7	3.4
Females	Urban area	0.9	11.8	12.7
	Non-urban area	0.6	5.9	6.6

TABLE 7 : SELF-INFLICTED INJURY: NUMBERS AND AGE-SPECIFIC RATES

Rates per 100,000 population

Age	MALES		FEMALES		BOTH SEXES	
	Numbers	Rates	Numbers	Rates	Numbers	Rates
10-	7	5.1	23	17.7	30	11.3
15-	56	44.7	211	175.8	267	108.8
20-	90	92.4	199	213.4	289	151.6
25-	56	65.9	143	173.7	199	119.0
30-	48	62.7	87	119.4	135	90.4
35-	64	75.4	95	120.3	159	97.0
40-	62	76.2	98	124.4	160	99.9
45-	56	77.5	69	93.9	125	85.7
50-	34	49.4	46	66.4	80	58.0
55-	41	66.7	42	69.6	83	68.2
60-	31	63.1	26	52.0	57	57.5
65-	26	71.3	21	48.9	47	59.2
70-	8	32.7	22	64.6	30	51.2
75-	10	55.4	13	51.0	23	52.8
80-	7	65.9	3	19.1	10	38.0
85+	3	52.3	1	10.5	4	26.3
All ages 10 years and over	599	44.6	1,099	82.4	1,698	63.0

TABLE 8 : ATTEMPTED SUICIDE AND SELF-INFLICTED INJURY
NUMBER OF PEOPLE AGED 15 YEARS AND OVER BY HOSPITAL DISTRICT

Hospital District	Number of persons aged 15 years and over	Rate per 10,000 population aged 15 years and over
Cook	36	14.9
Wellington	284	13.5
North Canterbury	267	12.7
Otago	100	11.3
Wairoa	7	10.6
Dannevirke	9	10.5
Auckland	434	10.2
Hawke's Bay	50	8.5
Palmerston North	58	8.1
West Coast	20	8.1
Taumarunui	7	7.8
Marlborough	14	7.8
Tauranga	24	7.7
Wanganui	38	7.6
Waikato	114	6.9
Nelson	25	6.6
Waitaki	11	6.5
South Otago	7	6.2
Ashburton	10	6.1
Thames	11	5.8
Waipawa	5	5.8
Taranaki	33	5.5
Wairarapa	16	5.5
Southland	39	5.5
South Canterbury	18	4.9
Northland	24	4.2
Bay of Plenty	6	3.2
Vincent	1	1.8
NEW ZEALAND	1,668	9.2

TABLE 9 : SUICIDE AND ATTEMPTED SUICIDE : AGE AND SEX
NUMBERS AND RATES PER 10,000 POPULATION

Age	SUICIDES				ATTEMPTED SUICIDES			
	Males		Females		Males		Females	
	Numbers	Rates	Numbers	Rates	Numbers	Rates	Numbers	Rates
10-	1	0.1	-	-	6	0.4	23	1.8
15-	6	0.5	4	0.3	50	4.0	207	17.2
20-	17	1.7	3	0.3	73	7.5	196	21.0
25-	9	1.1	2	0.2	47	5.5	141	17.1
30-	15	2.0	6	0.8	33	4.3	81	11.1
35-	26	3.1	2	0.3	38	4.5	93	11.8
40-	23	2.8	6	0.7	39	4.8	92	11.7
45-	15	2.1	10	1.3	41	5.7	59	8.0
50-	15	2.2	9	1.3	19	2.8	37	5.3
55-	22	3.6	9	1.5	18	2.9	34	5.6
60-	16	3.3	8	1.6	15	3.1	18	3.6
65-	11	3.0	9	2.1	15	4.1	12	2.8
70-	4	1.6	10	2.9	4	1.6	12	3.5
75-	7	3.9	3	1.2	3	1.7	10	3.9
80-	3	2.8	2	1.3	4	3.8	1	0.6
85+	1	1.7	1	1.1	2	3.5	-	-
Total	191	1.8	84	0.8	407	3.9	1,016	9.8
Total aged 15 years and over	190	2.1	84	0.9	401	4.5	993	10.9

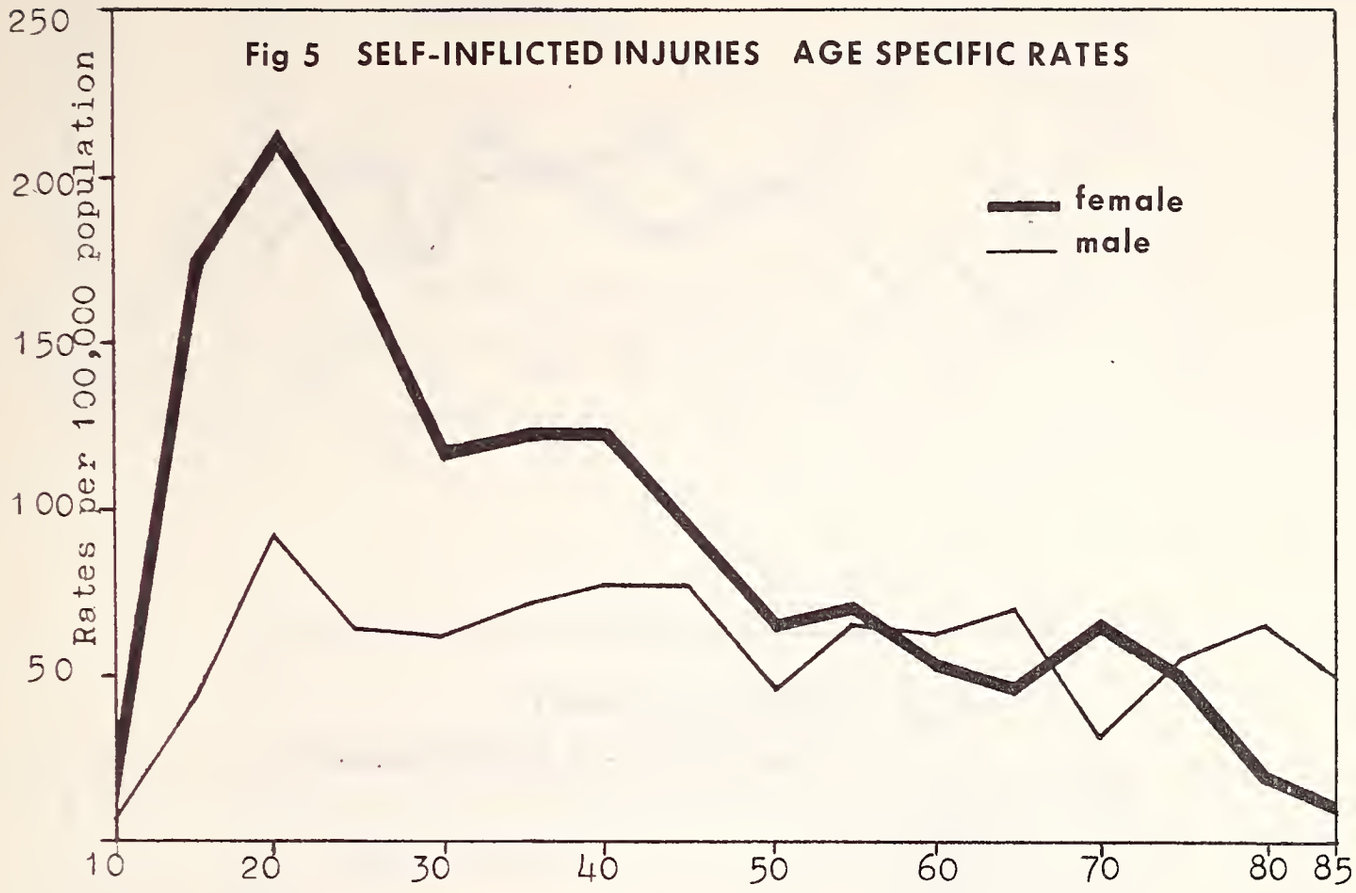


Fig 5 SELF-INFLICTED INJURIES AGE SPECIFIC RATES
Rates per 100,000 population
250
200
150
100
50
female
male
10
20
30
40
50
60
70
80
85

Fig 6 SUICIDES & ATTEMPTS.
AGE SPECIFIC RATES MALES.
suicides
attempts
80
70
60
50
40
30
20
10
20
30
40
50
60
70
80

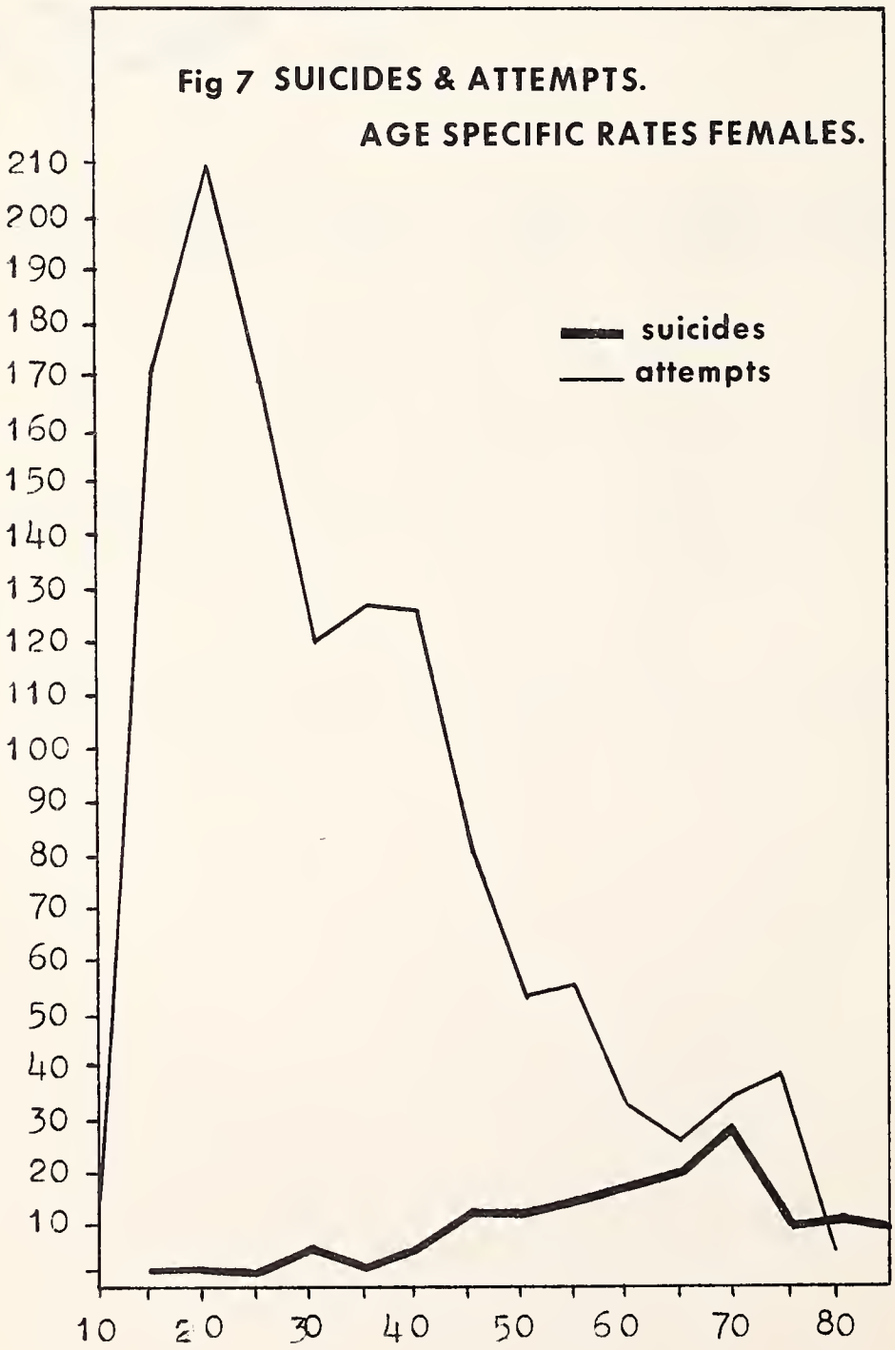


Fig 7 SUICIDES & ATTEMPTS.
AGE SPECIFIC RATES FEMALES.
suicides
attempts
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
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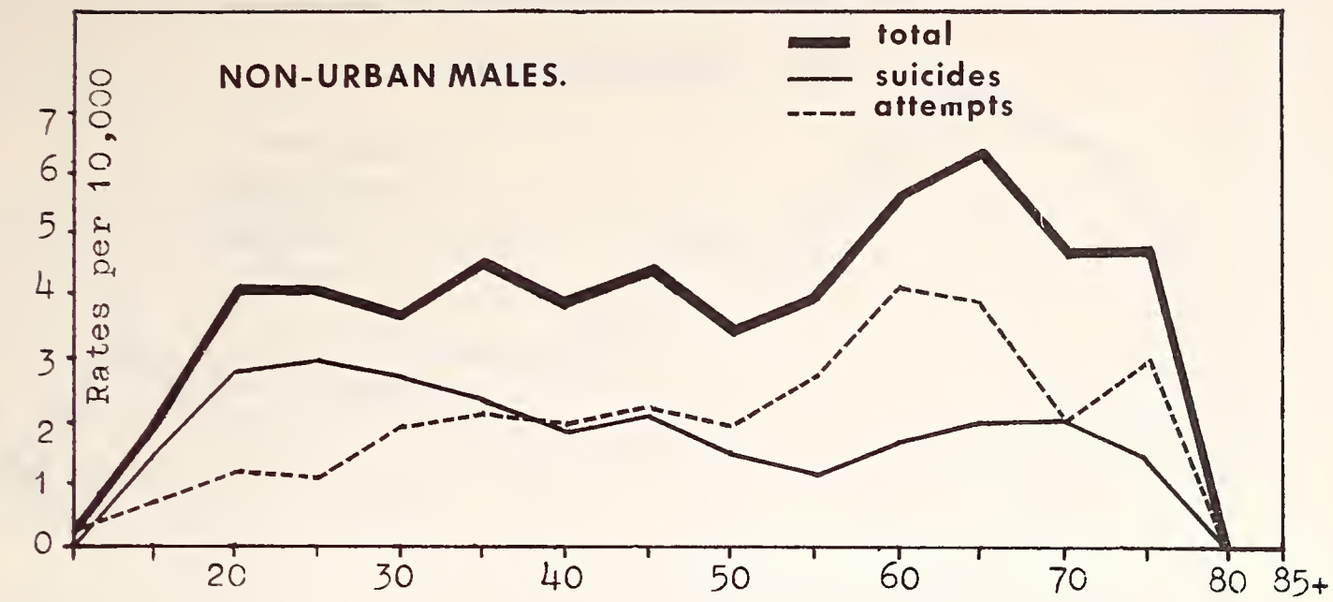
70
80

Fig 8 SUICIDES & ATTEMPTS. AGE SPECIFIC RATES



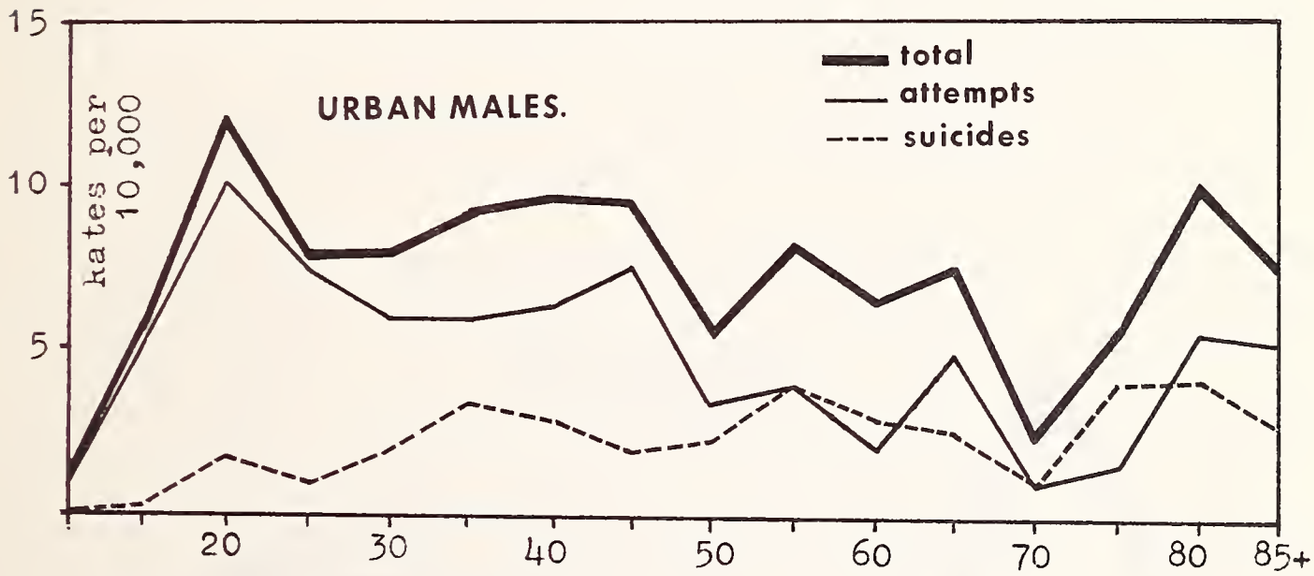
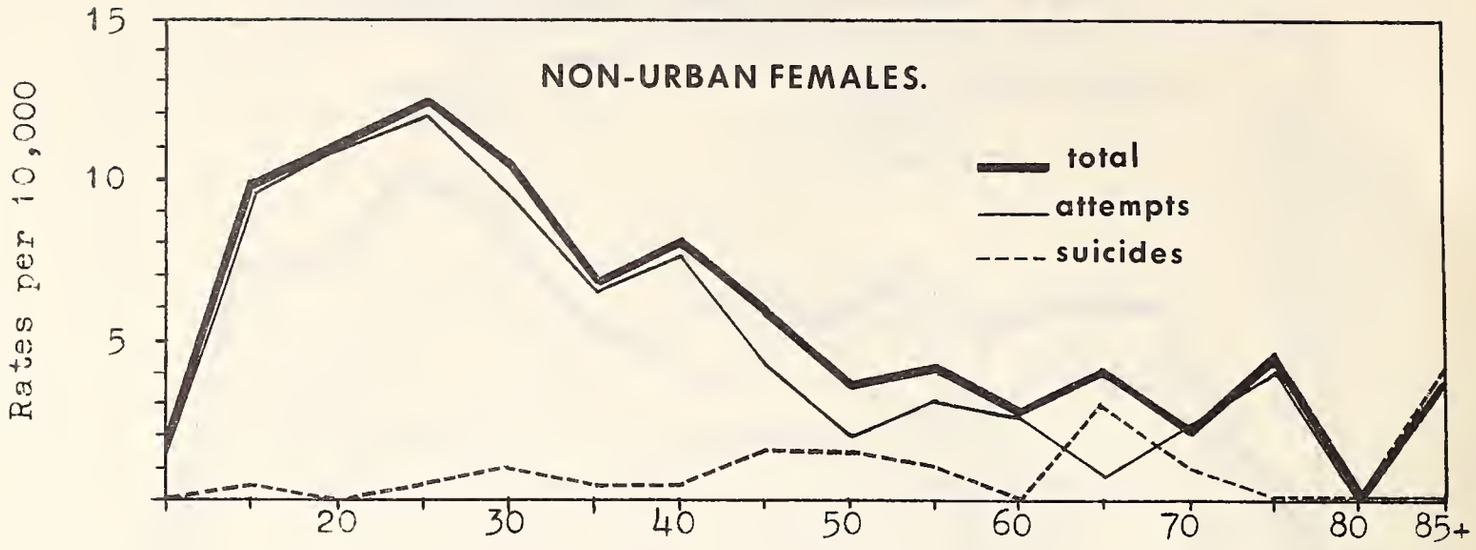
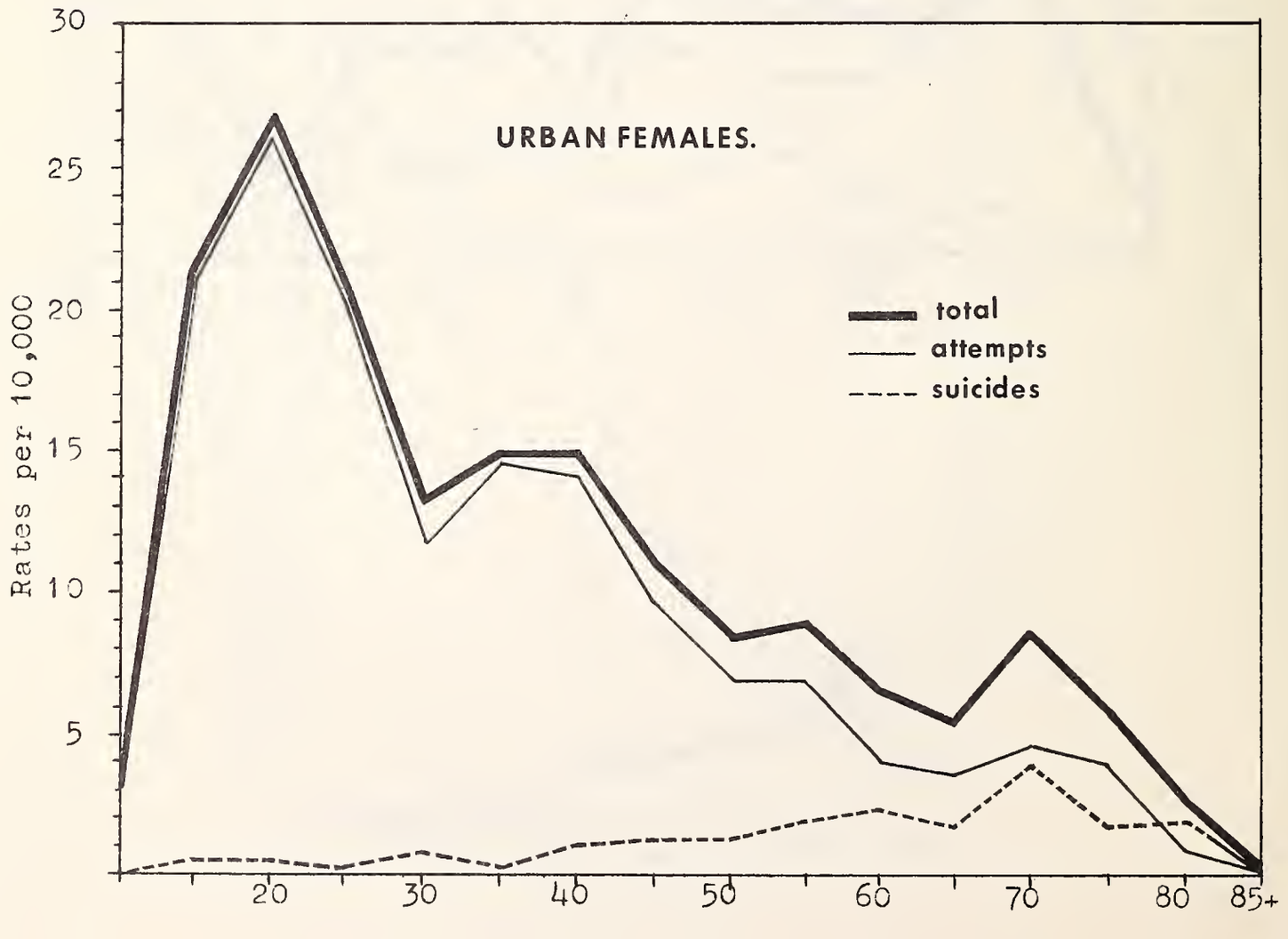


Fig 9 SUICIDES & ATTEMPTS. AGE SPECIFIC RATES





MAORIS

An earlier report on Maori patients in mental hospitals (Foster, 1962) showed that between 1953 and 1960 there had been an overall increase in the first admission rate for Maoris, largely as the result of higher admission rates in the younger age groups. It was considered that the lower Maori admission rates of the 1950's were probably associated with two main factors: the lack of local psychiatric treatment facilities available to a section of the community who at that time were predominantly a rural population, and a negative Maori attitude towards hospitalisation (and a reluctance on the part of Maoris to make use of hospital services). During the 1960's both the crude and the standardised rates for Maori first admissions to psychiatric hospitals continued to increase, and when compared with the 1959 rates had, by 1969, more than doubled.

In 1967, the year in which the cases in this study were reported, the standardised rates for Maori and non-Maori first admissions were at the same level - 178.3 per 100,000 for Maoris, 178.5 per 100,000 for non-Maoris. The Maori and non-Maori rates will be reviewed below.

There were 883 Maoris included in this study. The numbers and rates per 1,000 population are shown in Table 10. The age-specific rates for 60 years and over are poor indicators of the levels of illness because the numbers involved are very small. This results in fluctuations in the rates when one age group is compared with another. Nevertheless, the rates for Maoris aged 60 years and over, taken as a group, 5.8 per 1,000 population for males and 5.3 per 1,000 population for females, indicate that the level of reported illness was in the vicinity of half as high again in adult Maoris below 60 years of age as it was for Maoris above that age. The highest rates, which were for ages between 20 and 44 years, were about 60 percent higher than those for the Maori population aged 60 years and over. The rates for Maori women were consistently higher than those for Maori men for ages between 15 and 54 years. At older ages the male rate was generally the higher of the two.

Table 11 shows the age-specific rates for Maoris and non-Maoris. Also shown is the number of Maoris expected to be reported if the non-Maori age-specific rates applied to a population identical in size and age structure to the Maori population. This statistical device is employed when two populations are so different in age structure that differences or similarities between the cases drawn from the two populations may be hidden because of this fact alone. It is perhaps more usual in such comparisons to apply the Maori rates to the non-Maori population. This course was not followed, however, because of the small number of Maori cases reported for the older age groups. As the numbers of non-Maori cases are considerably greater they are likely to provide more valid age-specific rates. However, the numbers of Maoris enumerated in the 1966 national census are likely to be very close to the actual number alive at that time and are not so subject to chance as is the number of people from that population who were reported as having a psychiatric illness during the following year.

The observed rate at which Maoris were reported was 4.4 per 1,000, whereas the expected rate was 3.5 per 1,000. In terms of numbers alone the observed number was 24.7 percent higher than the expected number. Keeping in mind the limitations of this means of arriving at a conclusion, this could be interpreted as meaning that about 25 percent more psychiatric illness was reported among Maoris than among non-Maoris.

The differences between the observed and expected values are shown in Figure 10. It can readily be seen that the ages which mainly account for this difference lie between 15 and 44 years and, in particular, between 15 and 29 years.

Urbanisation

The proportion of the total Maori population living in urban areas showed a dramatic increase in 1966. At the time of the national census in 1936, 9 percent of Maoris lived in urban areas. Twenty years later the proportion was 21 percent. By 1961 the proportion had reached 29 percent but the 1966 national census showed a sharp upward trend with 41 percent of Maoris living in urban areas (Maori Population and Dwellings 1966). The increased proportion of Maoris living in urban areas has largely been caused by the influx of young people seeking work in the cities. At the time of the 1966 census 35 percent of urban area Maoris were aged between 15 and 34 years; only 27 percent of Maoris living elsewhere were in this age group. As these ages cover the age groups displaying the greatest differences between the observed and expected numbers of Maoris a closer look at urban area Maoris reported in the study was indicated.

In the following table the numbers of Maoris living in urban areas are shown by ages. The age grouping is different from that employed elsewhere in this report because of the manner in which the data were published in the census volume. Also shown is the expected number of Maoris reported had the urban area Maori population applied to the age-specific rates for Maoris living elsewhere. As the observed number was 81.1 percent higher than the expected number there is evidence that the level of psychiatric illness reported among Maoris living in urban areas was very much higher than that among Maoris living elsewhere.

Maori cases living in urban areas and elsewhere

Rates per 1,000 population

Age	Living in urban areas	Living elsewhere	Number of Maori cases living in urban areas	
			Observed	Expected
0-	1.4	0.8	56	32
15-	8.2	5.3	73	47
20-	10.8	6.2	83	47
25-	11.4	6.1	138	73
35-	12.7	6.5	91	46
45-	9.3	4.9	38	20
55-	8.2	4.6	17	10
65+	11.8	5.1	13	6
Totals	-	-	509	281

The types of illness reported in Maoris living in urban areas and elsewhere were examined to see if there were differences between the two. The data below indicate that there was little difference at all.

Diagnosis	Percentage of Maoris according to diagnosis living in urban areas and elsewhere	
	Urban area	Non-urban area
Senile and pre-senile dementia	1	1
Alcoholic psychosis	1	1
Other organic psychoses	2	3
Schizophrenia and paranoid states	24	24
Depressive psychosis	6	6

Diagnosis	Percentage of Maoris according to diagnosis living in urban areas and elsewhere	
	Urban area	Non-urban area
Other functional psychoses	6	5
Depressive neurosis	13	9
Other neuroses and psychosomatic disorders	7	11
Alcoholism	3	4
Other personality disorders	8	7
Transient situational disturbances and behaviour disorders of children	2	2
Non-psychotic mental disorders associated with physical condition	1	-
Mental retardation	11	16
Self-inflicted injury and observation	15	11

The principal diagnosis, accounting for 24 percent in each group, was schizophrenia and paranoid states. There was more depressive neurosis in the urban area group but fewer cases of other neuroses and psychosomatic disorders. If added together these two diagnoses made up 20 percent of the cases in each group. There were fewer cases of mental retardation in the urban area groups but more cases of self-inflicted injury and observation. For senile dementia, all forms of alcoholism, for functional and organic psychoses, personality disorders and transient situational disorders, percentages were about the same.

The question is posed "Why should the rate be so much higher for Maoris living in urban areas?" It is not hard to itemise possible reasons but sufficient information has not been collected to enable them to be ranked in importance or to allow assessment of the relative contribution each makes. Availability of services is certainly an important factor. A person in need of psychiatric care is more likely to seek treatment if it is readily available in the area in which he lives than if it is first necessary to travel to another town some distance away.

It is also possible that living in a city is in itself a reason for needing care. There are considerable stresses inherent in establishing a new life in an unfamiliar environment. If this is the case, however, urban life does not appear to determine the form the illness takes. Although the rate of illness is higher for city dwelling Maoris the diagnostic pattern retains characteristics of the pattern in Maoris living elsewhere.

TABLE 10 : MAORIS - NUMBERS AND AGE-SPECIFIC RATES PER 1,000 POPULATION

Age	MALES		FEMALES		BOTH SEXES	
	Numbers	Rates	Numbers	Rates	Numbers	Rates
0-	17	0.8	10	0.5	27	0.7
5-	20	1.2	12	0.7	32	0.9
10-	21	1.5	26	1.9	47	1.7
15-	61	6.1	70	7.2	131	6.6
20-	62	8.4	66	8.7	128	8.6
25-	53	7.4	74	10.4	127	8.9
30-	42	7.1	53	9.1	95	8.1
35-	41	8.0	47	9.3	88	8.6
40-	34	9.2	37	9.8	71	9.5
45-	23	7.2	25	8.2	48	7.7
50-	11	4.3	14	5.8	25	5.0
55-	16	7.5	12	7.0	28	7.3
60-	5	3.6	4	3.3	9	3.5
65-	7	7.0	5	5.9	12	6.5
70-	1	2.0	3	7.0	4	4.4
75-	3	9.3	2	7.3	5	8.4
80+	4	15.9	2	8.0	6	12.0
Totals	421	4.1	462	4.7	883	4.4

TABLE 11 : MAORI AND NON-MAORI AGE-SPECIFIC RATES
Rates per 1,000 population

Age	Maoris	Non-Maoris	Number of Maoris	
			Observed	Expected
0-	0.7	0.8	27	30
5-	0.9	0.8	32	28
10-	1.7	1.1	47	31
15-	6.6	4.5	131	90
20-	8.6	6.3	128	94
25-	8.9	6.4	127	92
30-	8.1	6.2	95	73
35-	8.6	6.5	88	67
40-	9.5	7.2	71	55
45-	7.7	7.4	48	46
50-	5.0	7.0	25	35
55-	7.3	6.3	28	24
60-	3.5	5.9	9	15
65-	6.5	6.3	12	12
70-	4.4	6.9	4	6
75-	8.4	8.1	5	5
80+	12.0	10.8	6	5
Totals	-	-	883	708

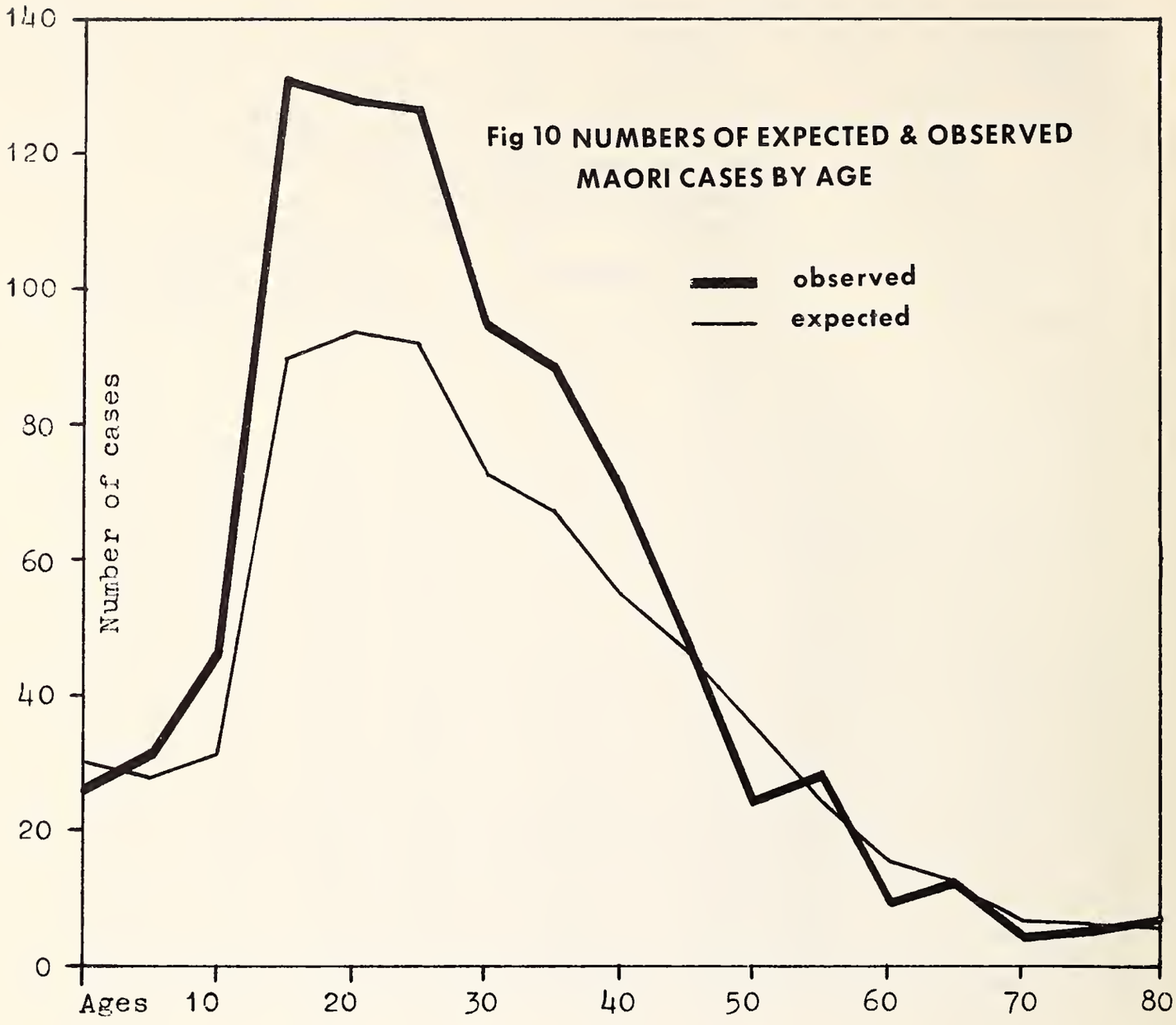


Fig 10 NUMBERS OF EXPECTED & OBSERVED MAORI CASES BY AGE
observed
expected
Number of cases
140
120
100
80
60
40
20
0
Ages
10
20
30
40
50
60
70
80

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